



OCCUPATIONAL STRUCTURE

**BIOTECHNOLOGY BASED INDUSTRY
(AGRICULTURE, HEALTHCARE, INDUSTRIAL)**





OCCUPATIONAL STRUCTURE

**Biotechnology Based Industry
(Agriculture, Healthcare, Industrial)**



JABATAN PEMBANGUNAN KEMAHIRAN
KEMENTERIAN SUMBER MANUSIA

Department of Skills Development
Ministry of Human Resources, Malaysia

First Printing, 2011
Copyright Department of Skill Development
Ministry of Human Resources, Malaysia 2011

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical photocopy, recording or any information storage and retrieval system, without permission in writing form

Department of Skill Development
Ministry of Human Resources Malaysia

Published in Malaysia by
Department of Skill Development
Ministry of Human Resources Malaysia
Aras 7-8, Blok D4, Kompleks D,
Pusat Pentadbiran Kerajaan Persekutuan
62530 Putrajaya, Malaysia
<http://www.dsd.gov.my>

Printed by
PERPATIH PRINTERS SDN BHD
No. 18, Jalan P/21, Sek. 10, Selaman Light Industrial Park,
43650 Bandar Baru Bangi, Selangor Darul Ehsan
Tel : 03 - 8926 3860 Fax : 03 - 8926 3830
Email : perpatihprinters@yahoo.com.my

Perpustakaan Negara Malaysia

Cataloguing-in-Publication Data

Occupational Biotechnology Based Industry
(Agriculture, Healthcare, Industrial)
ISBN 978-967-5876-27-1

Table of Contents

1.0	Executive Summary	1
2.0	Concept and Structure of the Malaysian Occupational Skill Qualification Framework (MOSQF)	3
	Source : Malaysia Occupational Skills Qualification Framework (MOSQF)	5
	Source : MOSQ Division, Departments of Skills Development	6
3.0	Biotechnology industry in Malaysia-Background of the Sector	7
3.1	Introduction	7
3.2	Definition of Biotechnology	8
3.2.1	Definition of Biotechnology according to Sub-Sectors	8
3.3	Current Analysis of the Sector/Sub-sector	10
3.4	Policies and Development Plan to Promote Biotechnology	13
3.4.1	National Biotechnology Policy	13
3.4.2	Biotechnology in the Ninth Malaysia Plan (RMK-9)	16
3.4.3	Biotechnology in the third Industrial Malaysia plan (IMP3)	17
4.0	Sector/Sub-Sector in Biotechnology Based Industry	18
4.1	Agricultural Biotechnology	18
4.1.1	Crops	19
4.1.2	Livestocks	19
4.1.3	Marine and Aquaculture	21
4.1.4	Natural Products	23
4.1.5	Bioinformatics (Agriculture)	24
4.2	Healthcare biotechnology	25
4.2.1	Contract Manufacturing Organisation (CMO)	25
4.2.2	Clinical Research Organisation (CRO)	27
4.2.3	Devices and Diagnostic	28
4.2.4	Pharmaceuticals/Bio pharmaceuticals	31

4.2.5	Therapeutics Technologies	32
4.2.6	Bioinformatics (Healthcare)	34
4.3	Industrial Biotechnology	34
4.3.1	Biofuels	35
4.3.2	Bio-remediation	38
4.3.3	Bio-Catalysts	40
4.3.4	Fine and Specialty Chemical	41
4.3.5	Biopolymer	44
4.3.6	Bioinformatics (Industrial)	45
5.0	Methodology of Occupational Analysis in Biotechnology Based Industry	46
5.1	Literature Search	46
5.2	Identifying Industry and public Players	46
5.3	Establish Contact with the Biotechnology Based Industry Players	46
5.4	Analysing the Information	46
5.5	Organise Workshop with Panels	47
6.0	Findings	48
6.1	The Scope of Biotechnology Industry in Malaysia	48
6.2	Job area in Biotechnology Industry	48
6.3	Job titles in Biotechnology Industry	49
6.3.1	Job Titles for Agriculture Biotechnology	49
6.3.2	Job Titles for Healthcare Biotechnology	51
6.3.3	Job Titles for Industrial Biotechnology	53
6.4	Critical and Non-Critical Job Titles	55
6.4.1	List of Job Titles for Agriculture Biotechnology	56
6.4.1.1	Critical Job Titles	56
6.4.1.2	Non-Critical Job Titles	58
6.4.2	List of Job Titles for Healthcare Biotechnology	60
6.4.2.1	Critical Job Titles	60
6.4.2.2	Non-Critical Job Titles	61
6.4.3	List of Job Titles for Industrial Biotechnology	63
6.4.3.1	Critical Job Titles	63
6.4.3.2	Non-Critical Job Titles	64

7.0	General Pre-Requisite	67
7.1	Language Skill	67
7.2	Information Technology (IT) Skill	67
7.3	Interpersonal, Communication and Management Skill	67
8.0	Conclusion and Recommendation	68
9.0	References	69
10.0	Annex	
Annex 1	Plan of Action	70
Annex 2	List of Expert Panel	73
Annex 3:	Industry Structure for Biotechnology Based Industry	74
Annex 4	Job Titles Hierarchy for Biotechnology Based Industry	92
Annex 5:	Critical and Non-Critical Job Titles Summary	120
Annex 6:	Occupational Definitions for the Agriculture Biotechnology	122
Annex 6.1	Research and Development division	123
Annex 6.1.1	R&D (Product Enhancement)	124
Annex 6.1.2	R&D (Product Development)	130
Annex 6.1.3	R&D (Seed/Mutation Breeding)	138
Annex 6.1.4	R&D (Tissue Culture)	145
Annex 6.1.5	R&D (GMO-Crops)	151
Annex 6.1.6	R&D (Clinical/Pre-Clinical)	157
Annex 6.1.7	R&D (Artificial Insemination (Livestocks/Aqua and Marine))	162
Annex 6.1.8	R&D (GMO(Livestocks/Aqua and Marine))	173
Annex 6.2	Production Division	184
Annex 6.2.1	Production (Administration)	185
Annex 6.2.2	Production (Processing)	191
Annex 6.2.3	Production (Packaging)	199
Annex 6.2.4	Production (Seed/Mutation Breeding)	204

	Annex 6.2.5 Production (Tissue Culture)	212
	Annex 6.2.6 Reproduction (Livestocks/Aqua and Marine)	220
Annex 6.3	Sales and Marketing Division	233
	Annex 6.3.1 Sales and Marketing (Customer Service)	234
	Annex 6.3.2 Sales and Marketing (Technical Service)	239
	Annex 6.3.3 Sales and Marketing (Marketing)	244
	Annex 6.3.4 Sales and Marketing (Sales)	249
Annex 6.4	Logistics and Warehousing Division	254
	Annex 6.4.1 Logistics and Warehousing (Logistics)	255
	Annex 6.4.2 Logistics and Warehousing (Warehouse)	263
Annex 6.5	Quality Assurance/Quality Control/Quality Management (QA/QC/QM) Division	271
	Annex 6.5.1 QA/QC/QM (Quality Assurance)	272
	Annex 6.5.2 QA/QC/QM (Quality Control)	277
	Annex 6.5.3 QA/QC/QM (Quality Management)	284
Annex 6.6:	Health, Safety & Environment (HSE) Division	288
	Annex 6.6.1 HSE (Environment)	289
	Annex 6.6.2 HSE (Health and Safety)	296
Annex 6.7	Regulatory Affairs Division	302
	Annex 6.7.1 Regulatory Affairs (Compliance)	303
	Annex 6.7.2 Regulatory Affairs (Regulatory)	308
Annex 6.8	Engineering Division	313
	Annex 6.8.1 Engineering (Maintenance)	314
	Annex 6.8.2 Engineering (Project Engineering)	321
	Annex 6.8.3 Engineering (Electrical and Instrumentation)	329
Annex 6.9	Bioinformatics	336
Annex 7	Occupational Definitions in the Healthcare Biotechnology	341
	Annex 7.1: Research and Development division	342
	Annex 7.1.1 R&D (Product Enhancements)	343
	Annex 7.1.2 R&D (Product Development)	349
	Annex 7.1.3 R&D (Clinical/Pre-Clinical)	355
Annex 7.2	Production Division	360
	Annex 7.2.1 Production (Administration)	361
	Annex 7.2.2 Production (Processing)	367

	Annex 7.2.3 Production (Packaging)	375
Annex 7.3	Sales and Marketing Division	380
	Annex 7.3.1 Sales and Marketing (Customer Services)	381
	Annex 7.3.2 Sales and Marketing (Technical Services)	386
	Annex 7.3.3 Sales and Marketing (Marketing)	391
	Annex 7.3.4 Sales and Marketing (Sales)	396
Annex 7.4	Logistics and Warehousing Division	401
	Annex 7.4.1 Logistics and Warehousing (Logistics)	402
	Annex 7.4.2 Logistics and Warehousing (Warehouse)	410
Annex 7.5	Quality Assurance/Quality Control/Quality Management (QA/QC/QM) Division	418
	Annex 7.5.1 QA/QC/QM (Quality Assurance)	419
	Annex 7.5.2 QA/QC/QM (Quality Control)	425
	Annex 7.5.3 QA/QC/QM (Quality Management)	434
Annex 7.6	Health, Safety and Environment (HSE) Division	438
	Annex 7.6.1 Health, Safety and Environment (HSE)(Environment)	439
	Annex 7.6.2 Health, Safety and Environment (HSE)(Health and Safety)	446
Annex 7.7	Regulatory Affairs Division	452
	Annex 7.7.1 Regulatory Affairs (Compliance)	453
	Annex 7.7.2 Regulatory Affairs (Regulatory)	458
Annex 7.8	Engineering Division	463
	Annex 7.8.1 Engineering (Maintenance)	464
	Annex 7.8.2 Engineering (Project Engineering)	471
	Annex 7.8.3 Engineering (Electrical and Instrumentation)	479
Annex 7.9	Bioinformatics	486
	Annex 7.9.1 Bioinformatics	487
Annex 8	Occupational Definitions in the Industrial Biotechnology	
Annex 8.1	Research and Development Division	492
	Annex 8.1.1 Research and Development (R&D)(Product Enhancement)	493
	Annex 8.1.2 Research and Development (R&D)(Product Development)	499
Annex 8.2	Production Division	505
	Annex 8.2.1 Production (Administration)	506

	Annex 8.2.2	Production (Processing)	512
	Annex 8.2.3	Production (Packaging)	520
Annex 8.3		Sales And Marketing Division	525
	Annex 8.3.1	Sales and Marketing (Customer Services)	526
	Annex 8.3.2	Sales and Marketing (Technical Services)	531
	Annex 8.3.3	Sales and Marketing (Marketing)	536
	Annex 8.3.4	Sales and Marketing (Sales)	541
Annex 8.4		Logistics and Warehousing Division	546
	Annex 8.4.1	Logistics and Warehousing (Logistics)	547
	Annex 8.4.2	Logistics and Warehousing (Warehouse)	555
Annex 8.5		Quality Assurance/Quality Control/Quality Management (QA/QC/QM) Division	563
	Annex 8.5.1	Quality Assurance/Quality Control/Quality Management	564
	Annex 8.5.2	Quality Assurance/Quality Control/Quality Management (QA/QC/QM) (Quality Control)	569
	Annex 8.5.3	Quality Assurance/Quality Control/Quality Management (QA/QC/QM) (Quality Management)	576
Annex 8.6		Health, Safety and Environment (HSE) Division	580
	Annex 8.6.1	Health, Safety and Environment (HSE) (Environment)	581
	Annex 8.6.2	Health, Safety and Environment (HSE) (Health and Safety)	588
Annex 8.7		Regulatory Affairs Division	594
	Annex 8.7.1	Regulatory Affairs (Compliance)	595
	Annex 8.7.2	Regulatory Affairs (Regulatory)	600
Annex 8.8		Engineering Division	605
	Annex 8.8.1	Engineering (Maintenance)	606
	Annex 8.8.2	Engineering (Project Engineering)	613
	Annex 8.8.3	Engineering (Electrical and Instrument)	621
Annex 8.9		Bioinformatics	628
	Annex 8.9.1	Bioinformatics	629

1.0 EXECUTIVE SUMMARY

Biotechnology is one of the fastest growing sectors in the world and is now seen as a major area of investment and target for support by governers worldwide. Over the past 50 years, biotechnology has supported countless scientific discoveries and has become a central component of the economics of many industrialised countries.

There are significant potential benefits to nations committed in participating in the biotechnology industry – in terms of higher crops yields, better healthcare and industrial expansion and more skilled scientists and technologists. Specifically, those countries which best learn how to correlate, analyse and communicate biological information will be the leaders in achieving economic and scientific advances.

Biotechnology is a new and innovative industry with innumerable career options for anyone interested in life sciences. Biotechnology has changed the quality of life through improved medicine, diagnostics, agriculture and waste management, to name a few. Because the field of biotechnology is still relatively new, there is an abundance of unique opportunities to make new discoveries and introduce useful innovations to the world.

Life sciences and biotechnology are widely regarded as among the most promising frontier technologies for the coming decades. There is emerging consensus that just as information and communications technology dominated the last century, the life sciences will dominate the 21st Century. Today the life sciences feature prominently not merely in science and research but also in the economic and development policies of a nation.

With the strong advantages of cultural and biodiversity, Malaysia possesses great potential in becoming one of the regional hub for tropically-based biotech research. In order to achieve such objectives, development for both the biotech industry and human capital development must be parallel to equip the nation with competitiveness in the global biotech platform in the future.

Biotechnology is an enabling tool for advances in agriculture, healthcare and industry providing for immense benefits to the nation particularly in building skills, value-added employment and improving the quality of a wide range products and services.

The Government of Malaysia recognises biotechnology as the next engine and driver of economic growth – a successful domestic biotechnology sector will strengthen our position in the global knowledge economy and improve our quality of life. This is reflected in several national policies:

- i. In the 8th Malaysia Plan, biotechnology is identified as one of the 5 core technologies to accelerate Malaysia's transformation into an industrialised nation by 2020;
- ii. In the 3rd National Agricultural Policy it is stated that the economic foundation for the development of agro-biotechnology and specialty natural products industries will be strengthened;
- iii. In the 3rd Outline Perspective Plan it is stated that biotechnology will also contribute towards increases in yield, quality and crop protection.
- iv. Direction by the Cabinet on 16th June 2004, for the Ministry of Science, Technology and Innovation (MOSTI) to undertake a study on the sustained utilisation of natural resources to develop the biotechnology industry.

2.0 CONCEPT AND STRUCTURE OF THE MALAYSIAN OCCUPATIONAL SKILLS QUALIFICATION FRAMEWORK (MOSQF)

The Malaysia Occupational Skills Qualification Framework (MOSQF) is a framework that will be a unified system to bind and interlink all the qualifications awarded in Malaysia. The MOSQF will serve as an instrument that develops and classifies qualifications based on a set of criteria that are approved nationally and is at par with international good practices at the level of learning attained by the learners. This includes learning outcomes achieved and thus clarifying levels of learning. The criteria will be used and accepted by all Department of Skills Development (DSD) accredited centres. The MOSQF is developed based on the Malaysian Qualifications Framework (MQF) and also based on frameworks used and referenced by other countries such as England, Wales & Northern Ireland, Australia, New Zealand and Europe. Therefore the MOSQF will enable it to become a translation device to make qualifications more readable and understandable across different countries. The framework was developed in order to improve the current national training system for all parties of interest such as individuals, skills training providers, the Government, associations, professional bodies, the industry and the Malaysian community. The MOSQF has defined eight (8) levels of qualifications in four (4) sectors of education. The four (4) sectors of education are the:

- Skills sector;
- Vocational and technical sector;
- Life-long learning sector; and
- Higher education (university) sector.

The eight (8) levels of qualifications can be seen in *Figure 2.1: MOSQF – Four (4) Higher Education Sectors and Eight (8) Qualifications Levels*.

MALAYSIA OCCUPATIONAL SKILLS QUALIFICATION FRAMEWORK (MOSQF)

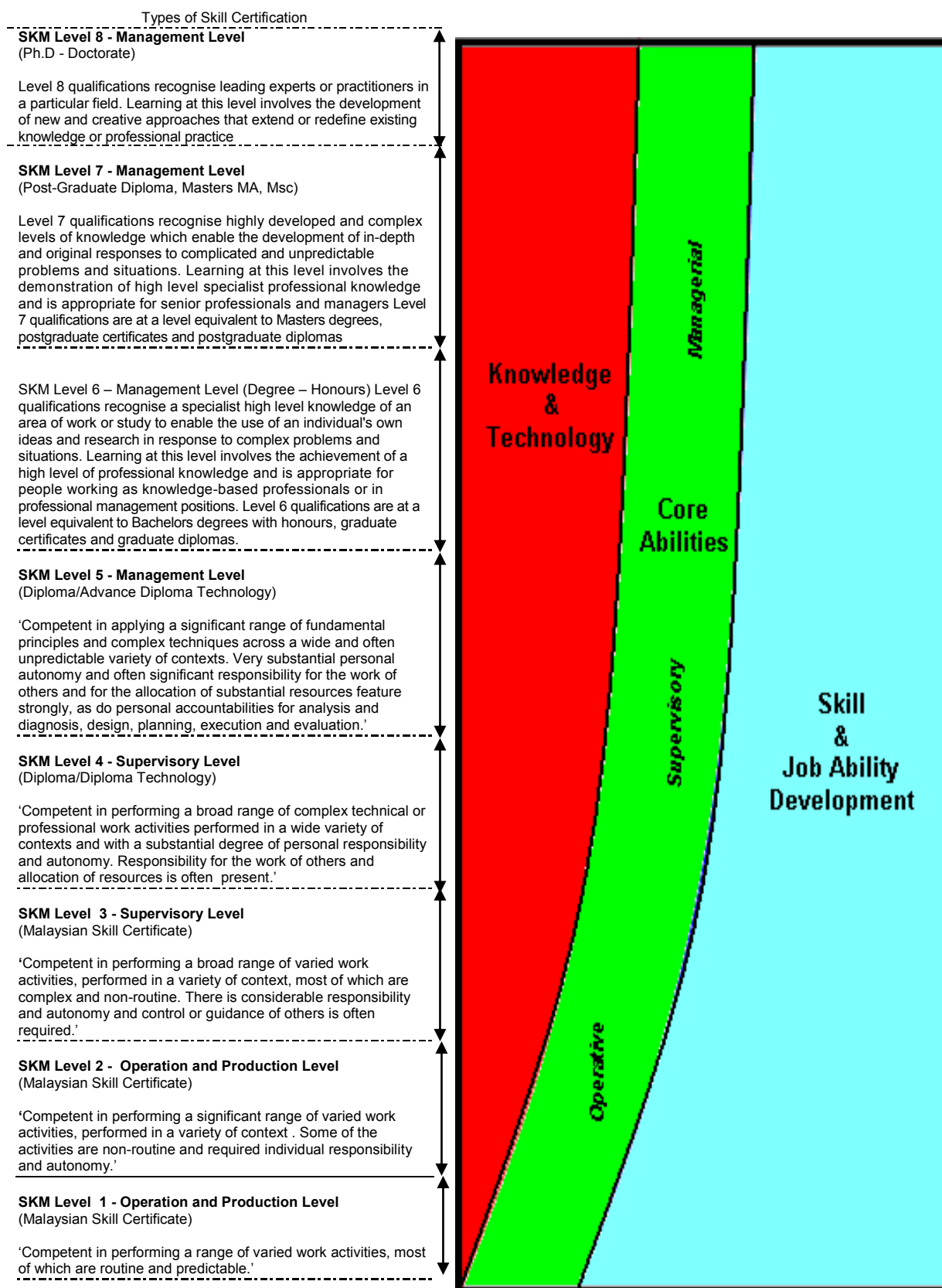
Level	Level Description
1	Achievement at this level reflects the ability to use relevant knowledge, skills and procedures to complete routine and predictable tasks that include responsibility for completing tasks and procedures subject to direction or guidance .
2	Achievement at this level reflects the ability to select and use relevant knowledge, ideas , skills and procedures to complete well-defined tasks and address straightforward problem . It includes taking responsibility for completing tasks and procedures, and exercising autonomy and judgment subject to overall direction or guidance.
3	Achievement at this level reflects the ability to identify and use relevant understanding , methods and skills to complete task and address problems that are well defined with a measure of complexity . It includes taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgments within limited parameter . It also reflects awareness of different perspectives or approaches within an area of study or work.
4	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address problems that are well defined but complex and non-routine . It includes taking responsibility for overall courses of action as well as exercising autonomy and judgment within fairly broad parameters . It also reflects under-standing of different perspective or approaches within an area of study or work.
5	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address broadly-defined, complex problems . It includes taking responsibility for planning and developing courses of action as well as exercising autonomy and judgment within broad parameters. It also reflects understanding of different perspectives, approaches or schools of thought and the reasoning behind them .

Level	Level Description
6	Achievement at this level reflects the ability to refine and use relevant understanding, methods and skills to address complex problems that have limited definition . It includes taking responsibility for planning and developing courses of action that are able to underpin substantial change or development, as well as exercising broad autonomy and judgment . It also reflects an understanding of different perspectives, approaches of schools of thought and the theories that underpin them .
7	Achievement at this level reflects the ability to reformulate and use relevant understanding, methodologies and approaches to address problematic situations that involve many interacting factors. It includes taking responsibility for planning and developing courses of action that initiate or underpin substantial change or development, as well as exercising broad autonomy and judgment. It also reflects an understanding of theoretical and relevant methodological perspectives, and how they affect their area of study or work .
8	Achievement at this level reflects the ability to develop original understanding and extend an area of knowledge or professional practice. It reflects the ability to address problematic situations that involve many complexes, interacting factors through initiating, designing and undertaking research, development or strategic activities. It involves the exercise of broad autonomy, judgement and leadership in sharing responsibility for the development of a field of work or knowledge, or for creating substantial professional or organisational change. It also reflects a critical understanding of relevant theoretical and methodological perspectives and how they affect the field of knowledge or work.

Figure 2.1: MOSQF – Four (4) Higher Education Sectors and Eight (8) Qualifications Levels.

Source: MOSQ Division, Department of Skills Development

Date Reviewed: 5 Jun 2010



Source: MOSQ Division, Department of Skills Development
Date Reviewed: 5 Jun 2010

3.0 BIOTECHNOLOGY INDUSTRY IN MALAYSIA – BACKGROUND OF THE SECTOR

3.1 Introduction

Advances in science and technology have been identified as the key drivers of a nation's economic growth. It is globally recognised that a nation's future economic prosperity will come from developing strong and vibrant knowledge – based economies that export ideas and innovations.

National Biotechnology Policy stipulated that biotechnology is one of the main engines of growth for Malaysian economy in our aspiration to reach Vision 2020. Biotechnology will play an important role in both wealth creation and to provide for the social well-being of Malaysians. Biotechnology has been in existence in Malaysia for a long time.

In the country, we are truly blessed with one of the most naturally endowed biodiversities in the world. Being one of the world's 17 mega diverse countries in marine biodiversity and also one of the 12 world's hotspots for biodiversity, Malaysia's potential in developing biotechnology looks brighter than ever. However, in order for a policy to be implemented to its full effectiveness, it requires constant feedback to improve.

3.2 Definition of Biotechnology

Britannica Concise Encyclopaedia defines Biotechnology as: The use of biology to solve problems and make useful products. The growth of the field is linked to the development in the 1970s of genetic engineering. Biotechnology merges biological information with computer technology to advance research in other areas, including nanotechnology and regenerative medicine. Today there are numerous commercial biotechnology firms that manufacture genetically engineered substances for a variety of mostly medical, agricultural, and ecological uses.

Merriam-Webster defines biotechnology as: the manipulation (as through genetic engineering) of living organisms or their components to produce useful usually commercial products (as pest resistant crops, new bacterial strains, or novel pharmaceuticals); 1: the manipulation (as through genetic engineering) of living organisms or their components to produce useful usually commercial products (as pest resistant crops, new bacterial strains, or novel pharmaceuticals);

3.2.1 Definition of Biotechnology According to Sub-sector

a. Agricultural Biotechnology

Agricultural Biotechnology is also known as a green biotechnology. This classification takes into account all biotechnology used in relation to plants whether it is crops or ornamental plants. Agricultural Biotechnology primarily focuses on using biotechnology to increase the yield of crops, reduce the plant's vulnerability to environmental stress and to improve nutritional quality and quantity of crops. Besides that, green biotechnology also improves the taste, texture and appearance of food. It also helps to reduce dependence on fertilisers, pesticides and agrochemicals which may harm our health in the long run and has been credited with production of novel substances in crop plants.

Agricultural Biotechnology relates to applications of biotechnology in food and agriculture. Examples of agricultural technology research and applications include genetically modified crops that offer:

- Crops that can use low quality soil to increase food production
- Crop that offer addition features such iron in rice to better public health
- Resistant crops that need less pesticides to become more cost efficient

b. Healthcare Biotechnology

Healthcare Biotechnology or red biotechnology focuses on fields of biotechnology which is related to healthcare. This field has been in existence in Asia for a long while with various communities throughout Asia using herbal concoctions to treat illnesses. In modern biotechnology, red biotechnology focuses on treatment of illnesses and diagnosis of diseases through novel methods such pharmagenomics, genetic testing, gene therapy, cloning, creating new pharmaceutical products and the Human Genome Project.

Healthcare Biotechnology relates to applications of biotechnology for medicine and health. Examples include new therapies based on the understanding of root causes of illness (e.g. cancer) and personalized diagnosis and treatments based on knowledge of an individual's genetic predisposition.

c. Industrial Biotechnology

Industrial Biotechnology is also known as white biotechnology. This field of biotechnology involves applying biotechnology to industrial processes. Usage of white biotechnology in industrial processes are lauded as environmentally friendly as it is said to consume less resources when producing a chemical and can also be used to bio remediate the environment when used to destroy hazardous and polluting chemicals.

The forefronts of this field of biotechnology are in the fields of carbon foot print management and environmental protection. This field also deals with sustainability issues of industry and its impact to the environment.

Industrial Biotechnology relates to applications of biotechnology in managing waste and environment. Examples of industrial biotechnology research and applications include development of biodegradable plastics, bacteria engineered to clean up toxic chemical spills, and fibres from renewable resources such as corn.

3.3 Current Analysis of the Sector/Sub-sector

Biotechnology is given prominent attention and emphasis by the Malaysian Government as it recognises the importance and the potential of this sector to our economy. As a result, the National Biotechnology Policy was launched in April 2005. The support given by the Government is further boosted under the 9th Malaysia Plan (2006 – 2010).

According to Malaysian Biotechnology Information Centre (MABIC), in order to achieve the aspiration of the Government to make Malaysia the preferred destination for foreign biotechnology players and investors, the Government did major revamp to the earlier proposed project, which was called BioValley Malaysia. BioValley Malaysia which was originally to be built in Dengkil, was intended to create a world-class research facilities in genomics, pharmaceuticals, nutraceuticals and agribiotech.

However, in the new roadmap, it is decided that resources will be put into developing this three centres of excellence in existing research facilities based on their past track record and expertise. Thus, the centre of excellence for agribiotechnology will be based in the Malaysian Agricultural Research and Development Institute (MARDI) and Universiti Putra Malaysia (UPM). The centre of excellence for genomics and molecular biology will be in Universiti Kebangsaan Malaysia (UKM), and the pharmaceuticals and nutraceuticals will be at the Biovalley in Dengkil with strong affiliation with Universiti Sains Malaysia (USM).

Malaysia aspires to be a biotechnology hub and this is clearly spelled out in the National Biotechnology Policy that was launched on the 28th April 2005. It is estimated that by 2020, this sector would create 280,000 jobs and contribute five per cent to the country's Gross Domestic Product. Total investment under the National Biotechnology Policy is expected to be around RM30 billion (US\$7.9 billion). Whereas, a total of RM2.1 billion has been allocated for biotechnology in the Ninth Malaysia Plan. Out of this, an initial RM300 million has been allocated to Malaysian Biotechnology Corporation to initiate commercialisation, technology acquisition, entrepreneur development and for the development of intellectual property framework.

To streamline biotechnology research, seven Biotechnology Cooperative Centres (BCCs) have been established. The BCCs help to coordinate biotech research in the various research organisations to improve cooperation and reduce duplication.

The seven BCCs are listed here:

- i. Molecular Biology Cooperative Centre University Malaya (UM) and Universiti Kebangsaan Malaysia (UKM);
- ii. Plant Biotechnology Cooperative Centre Malaysian Agricultural Research and Development Institute (MARDI);
- iii. Animal Biotechnology Cooperative Centre Universiti Putra Malaysia (UPM);
- iv. Medical Biotechnology Cooperative Centre Universiti Malaysia Sarawak (UNIMAS) and Institute of Medical Research (IMR);
- v. Environmental/Industrial Biotechnology SIRIM Cooperative Centre;
- vi. Biopharmacy Cooperative Centre Universiti Sains Malaysia (USM); and
- vii. Food Biotechnology Cooperative Centre Universiti Putra Malaysia (UPM) and Malaysian Agricultural Research and Development Institute (MARDI).

Presently, there are some biotechnology-related industries in Malaysia, but most are using what can be classified as conventional biotechnology processes. Since, Malaysia is largely an agricultural-based country; it is not surprising that agricultural biotechnology have received greater emphasis.

Agricultural biotechnology is envisaged to be a potential tool to ensure food security for the country. It is also a vehicle for wealth creation. Tissue culture of several industrial crops (oil palm, rubber, rattan, forest trees), together with food crops (rice, banana, sago, herbs and medicinal plants) and ornamentals (orchids, pitcher plants) has been successfully carried out for some time. There are a number of ongoing researches on genetically modified plants. All of them are at the experimental stage.

Food biotechnology which comes under the sub-sector of Agricultural Biotechnology in general is relatively new in Malaysia, although food and food ingredients produced by traditional biotechnology like fermentation technology have brought to market products like soy sauce, yogurt, nata, 'tempeh', 'tapai' and 'budu'. Food biotechnology has also produced high quality clarified fruit juices. A number of industries producing sweeteners and food additives based on fermentation have been in existence for decades in this country.

Several animal recombinant vaccines have been produced to assist the development of animal husbandry. Marker assisted breeding strategies are also being practiced to increase the efficiency of livestock breeding programs.

For the Industrial biotechnology, the application of bioremediation techniques in the treatment of industrial and agricultural wastes has found widespread acceptance. New developments in industrial biotechnology in Malaysia encompass activities such as optimization and enhancement of new treatment systems through bio-augmentation or genetic engineering.

Research in healthcare biotechnology has generated several diagnostics kits for dengue and other infectious tropical diseases. Although, R&D activities in bio pharmacy are relatively new in this country, a bio-enhanced formulation of the anti-malarial drug artemisinin, with increased efficacy has been produced.

3.4 Policies and Development Plan to Promote Biotechnology

3.4.1 National Biotechnology Policy

The National Biotechnology Policy envisions that biotechnology will be a new economic engine for Malaysia, enhancing the nation's prosperity and well-being. To succeed, the Policy aims to build a conducive environment for Research & Development and industry development whilst leveraging on the country's existing areas of strength. The Policy which is expected to give impetus to the biotechnology sector in Malaysia addresses vital aspects of biotechnology development such as the priority areas, legal, safety, financial and others issues. The policy spells out nine thrusts, which include transforming and enhancing the value creation of the agricultural sector through biotechnology. The other area of priority is healthcare and industrial biotechnology.

The Policy is divided into three main phases:

I. Phase I (2005-2010):

Phase I will focus on:

- i. capacity building and the establishment of the Malaysian Biotech Corporation (MBC);
- ii. the establishment of advisory and implementation councils,
- iii. the education and training of knowledge workers;
- iv. the development of a legal and intellectual property (IP) framework; and
- v. the creation of jobs in the areas of agricultural biotechnology, healthcare biotechnology, industrial biotechnology, and bioinformatics.

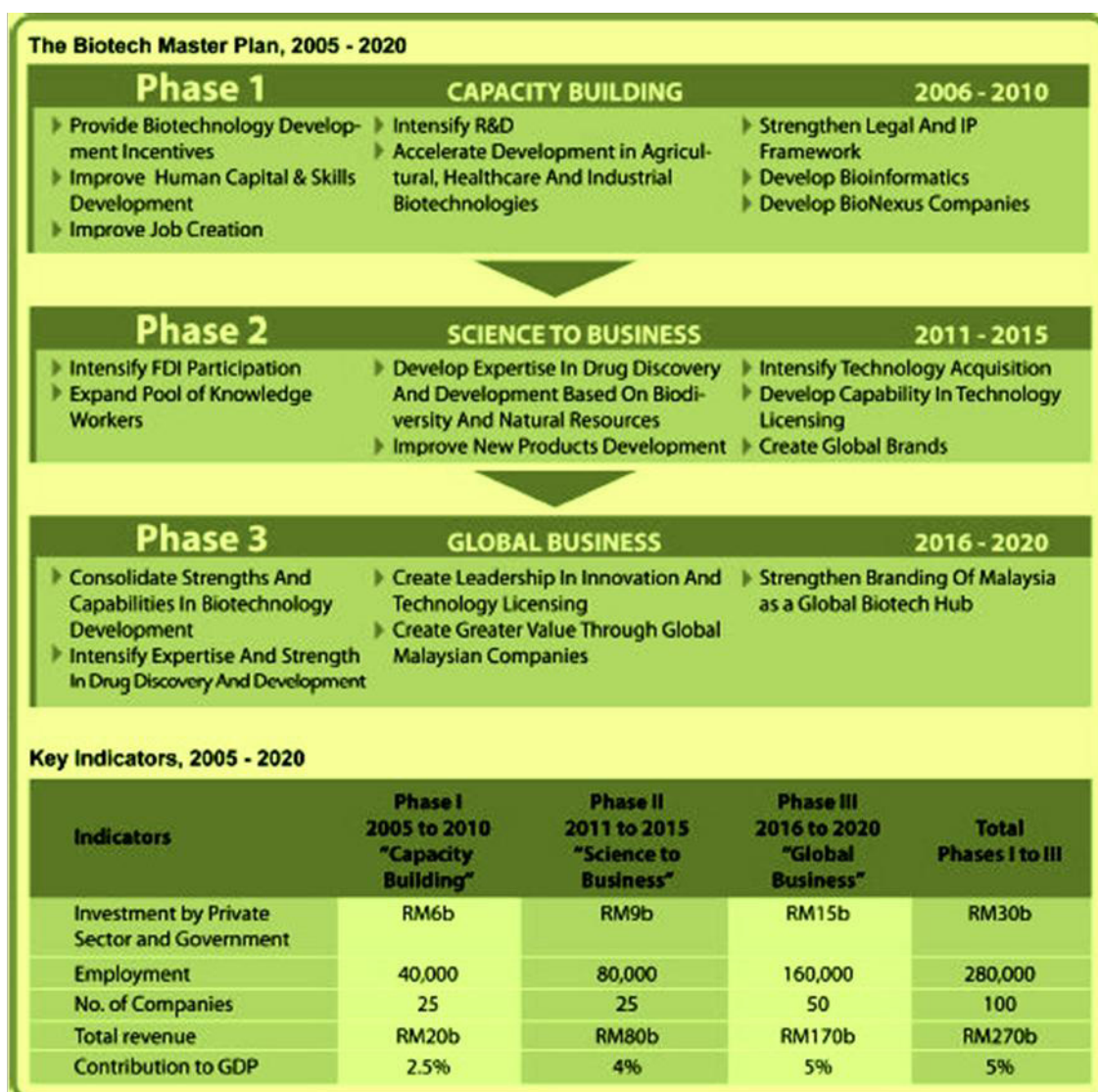
II. Phase II (2010-2015)

Phase II will emphasise on:

- i. the business aspects, such as developing expertise in drug discovery;
- ii. the development based on natural resources,
- iii. new product development;
- iv. technology acquisition; and
- v. licensing.

III. Phase III (2016-2020

Phase III will be based on the results achieved in the first two phases and bringing local biotech companies to international status.



Source: Biotechcorp

The National Biotechnology Policy is underpinned by nine policy thrusts:

Thrust 1: Agriculture Biotechnology Development

Transform and enhance the value creation of the agricultural sector through biotechnology.

Thrust 2: Healthcare Biotechnology Development

Capitalize on the strengths of biodiversity to commercialise discoveries in natural products as well as position Malaysia in the bio-generics market.

Thrust 3: Industrial Biotechnology Development

Ensure growth opportunities in the application of advanced bio-processing and bio-manufacturing technologies.

Thrust 4: R&D and Technology Acquisition

Establish Centres of Excellence, in existing or new institutions, to bring together multidisciplinary research teams in co-ordinated research and commercialisation initiatives. Accelerate technology development via strategic acquisitions.

Thrust 5: Human Capital Development

Build the nation's biotech human resource capability in line with market needs through special schemes, programmes and training.

Thrust 6: Financial Infrastructure Development

Apply competitive "lab to market" funding and incentives to promote committed participation by academia, the private sector as well as government-linked companies. Implement sufficient exit mechanisms for investments in biotech.

Thrust 7: Legislative and Regulatory Framework Development

Create an enabling environment through continuous reviews of the country's regulatory framework and procedures in line with global standards and best practices. Develop a strong intellectual property protection regime to support R&D and commercialisation efforts.

Thrust 8: Strategic Positioning

Establish a global marketing strategy to build recognition for Malaysian biotech and benchmark progress. Establish Malaysia as a centre for Contract Research Organisations and Contract Manufacturing Organisations.

Thrust 9: Government Commitment

Establish a dedicated and professional implementation agency overseeing the development of Malaysia's biotech industry, under the aegis of the Prime Minister and relevant government ministries.

3.4.2 Biotechnology in the Ninth Malaysia Plan (RMK-9)

The government's development plans, called the Malaysian Plan, currently the Ninth Malaysia Plan, started in 1950 during the British colonial rule. The plans were largely centred on accelerating the growth of the economy by selectively investing in selective sectors of the economy and building infrastructure to support said sectors. For example, in the current national plan, three sectors - agriculture, manufacturing and services, will receive special attention to promote the transition to high value-added activities in the respective areas.

The Ninth Malaysia Plan announced on the 31st March 2006 further defined and detailed the goals of the Malaysian government in relation to the biotechnology sector. Importantly the Plan reviewed the amount of funding support committed to developing the sector in Malaysia (as tabled below). It is anticipated that the biotechnology sector will benefit from all of these investments, including the funding support directed to biotechnology projects which, in part, will focus on the development of novel crops, Live stock, aquaculture and marine areas.

9th Malaysia Plan Biotechnology Sector Spending	Allocation (US\$, M)	Allocation (RM)
R&D Development	\$129.9	\$463.0
Biotechnology R&D	\$101.9	\$363.0
Biotechnology Commercialization Fund	\$28.1	\$100.0
Technology Acquisition Programme	\$28.1	\$100.0
Biotechnology Business Development	\$148.7	\$529.8
Technology and IP Management	\$28.1	\$100.0
Entrepreneurship Development	\$14.0	\$50.0
Agro-Biotechnology Projects	\$22.4	\$79.8
Institutional Support and Equity	\$84.2	\$300.0
Biotechnology Infrastructure	\$260.6	\$928.5
Total	\$567.3	\$2,021.3

Source: 9th Malaysia Plan, Economic Planning Unit

Source: Biotechcorp

3.4.3 Biotechnology in the Third Industrial Malaysia Plan (IMP3)

Other than the generalised plans like the Ninth Malaysia Plan, the government also has a development plan that is targeted to improve the manufacturing sector which is called the Industrial Master Plan. Currently, the plan is called the Third Industrial Master Plan (IMP3) which covers a period from 2006 to 2020. The industrial plans aim to make Malaysia a major trading nation and build up the country's economy and human capital.

During the Plan Period, the agriculture sector will transformed into a more commercialised and technology-intensive sector. Farm mechanisation will be applied on a wider scale. More market-driven R&D activities will be undertaken to enhance the commercialisation of agriculture produce. Innovation in the sector will be encouraged through the application of biotechnology. Biotechnology in the sector includes:

- Food processing;
- Seed development;
- Health products;
- Plant research;
- Cell culture; and
- Microbial pesticides and other micro-organisms.

In Ninth Malaysia Plan also mentioned that the exports of biotechnologies products is one of the strategies to enhance Malaysia's position as major trading nation.

4.0 SECTOR/SUB SECTOR IN BIOTECHNOLOGY BASED INDUSTRY

According to National Biotechnology Policy, Biotechnology based industry consists of three main sectors which is Agricultural Biotechnology, Healthcare Biotechnology and Industrial Biotechnology. See Figure 1.

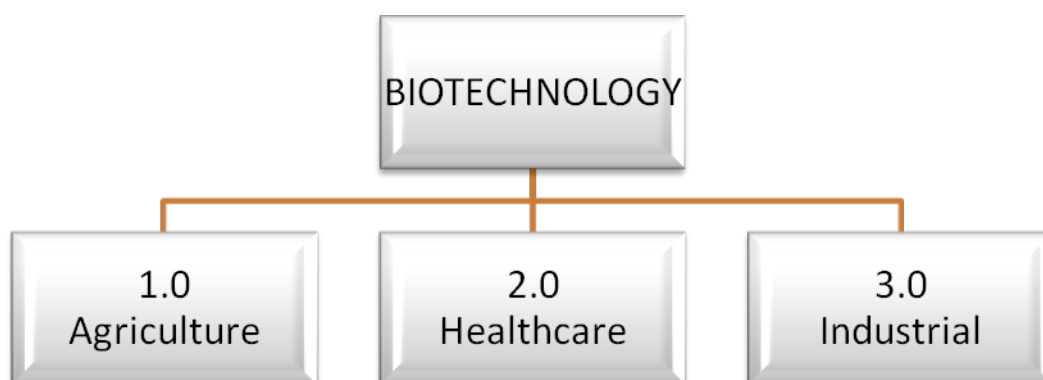


Figure 1: Main Sectors of Biotechnology Industry

4.1 Agricultural Biotechnology

The Agricultural Biotechnology sector consists of four main subsectors which are Crops, Livestocks, Marine and Aquaculture, Natural Products and Bioinformatics. See Figure 2.

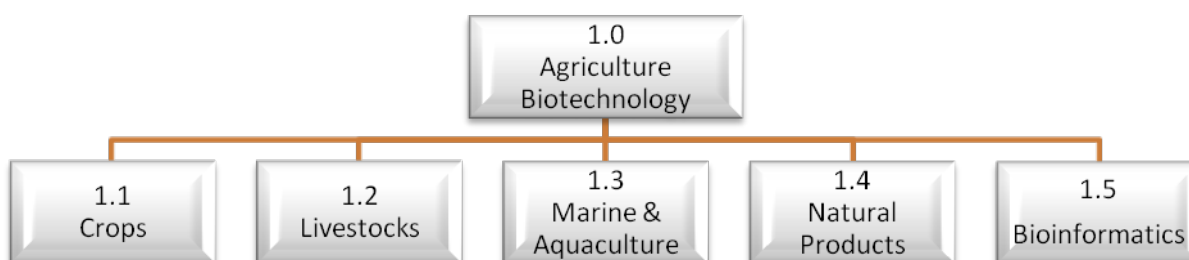


Figure 2: Sub sectors of Agricultural Biotechnology

4.1.1 Crops

A crop is the annual or season's yield of any plant that is grown in significant quantities to be harvested as food, as livestock fodder (animal feed), fuel, or for any other economic purpose. This category includes crop species as well as agricultural techniques related to cropping.

There are many types of crops that are used for industrial purposes. For example, crops are grown and harvested for the sole purpose of making profit and feeding people, as they are grown in large amounts in a certain area suitable for growing crops.

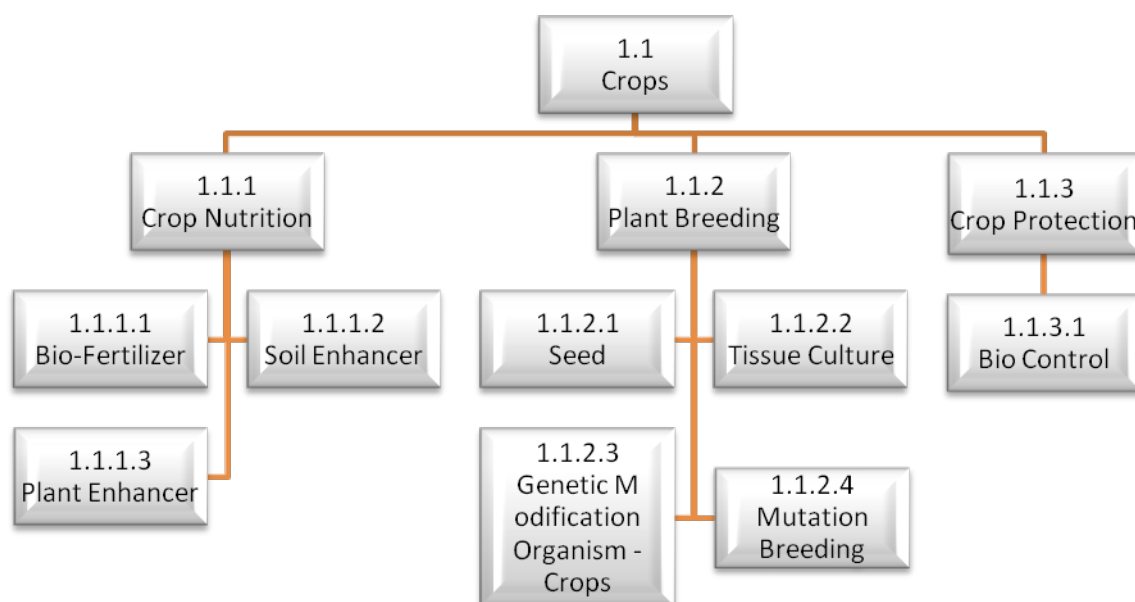


Figure 3: Agricultural Biotechnology (Crops) Focus Areas

4.1.2 Livestocks

Livestock refers to one or more domesticated animals raised in an agricultural setting to produce commodities such as food or fibre, or labour. The term "Live stock" as used in this article does not include poultry or farmed fish; however the inclusion of these, especially poultry, within the meaning of "Live stock" is common. Live stock generally is raised for subsistence or for profit. Raising animals (animal husbandry) is an important component of modern agriculture.

In Malaysia, the term livestock is referred to the poultry (broiler and egg), ruminant and swine industry. Poultry and swine farming represent by far the major proportion of the livestock industry in terms of output value. The 2008 ex-farm production value of chicken and duck eggs was estimated to be RM1917 million and poultry meat output are estimated to be in the region of RM4756 million while the swine industry contributed about RM1446 million during that year. These sub-sectors are operated largely in a commercially oriented manner and are increasingly managed as private or public limited companies.

On a broader view, livestock refers to any breed or population of animal kept by humans for a useful, commercial purpose. This can mean domestic animals, semi-domestic animals, or captive wild animals. Semi-domesticated refers to animals which are only lightly domesticated or of disputed status. These populations may also be in the process of domestication. Some people may use the term livestock to refer just to domestic animals or even just to red meat animals.

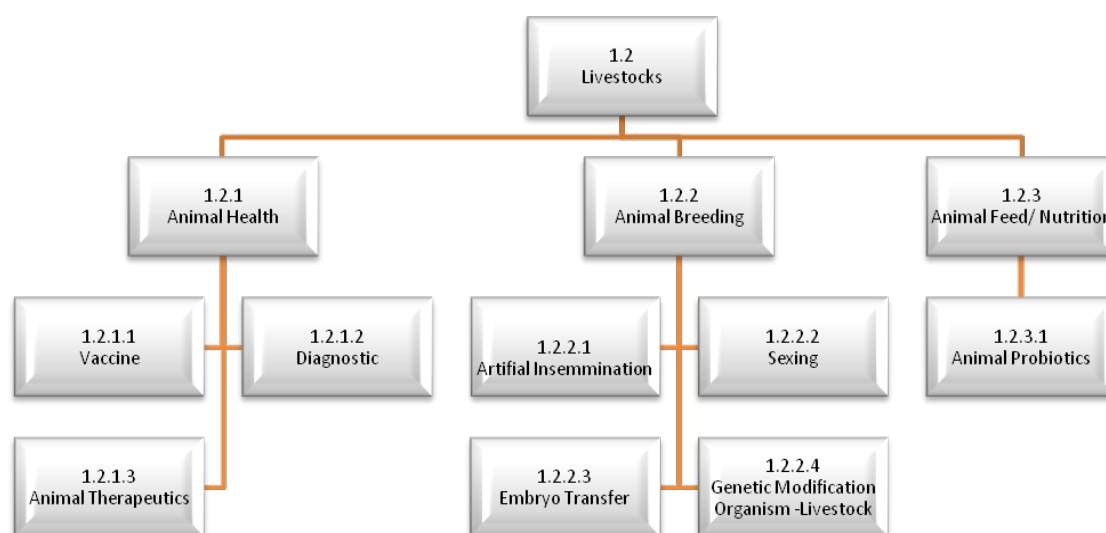


Figure 4: Agricultural Biotechnology (Livestocks) Focus Areas

The ruminant sector lags far behind with the majority of cattle, goat and sheep still owned by individual farmers who rear these animals as part of their overall rural agricultural activities. The trend is expected to change by the recent development of livestock nuclear farm establishments utilising artificial inseminations and embryo transfers. The total ex-farm output value of beef and milk is estimated to be about RM759.6 million and mutton about RM50.01 million in 2008. The main potential for cattle rearing appears to be in oil palm plantations where there is ample edible herbage available for grazing.

More importantly, the livestock production industry are undergoing structural change from traditional small scale backyard farming to large integrated farming utilising technology to improve efficiency and bio-security.

This has created huge demand for modern farming systems, improved breeding and animal nutrition and health products. The downstream meat processing sector has also witnessed strong growth driven by domestic demand and exports, especially for chicken, beef and swine meat.

4.1.3 Marine & Aquaculture

Marine aquaculture is the process of breeding, raising, and harvesting animals and plants for commercial use. Aquaculture can take place in man-made bodies of water or existing waterways. Marine aquaculture refers to raising marine animals, such as shrimp, siakap and tilapia.

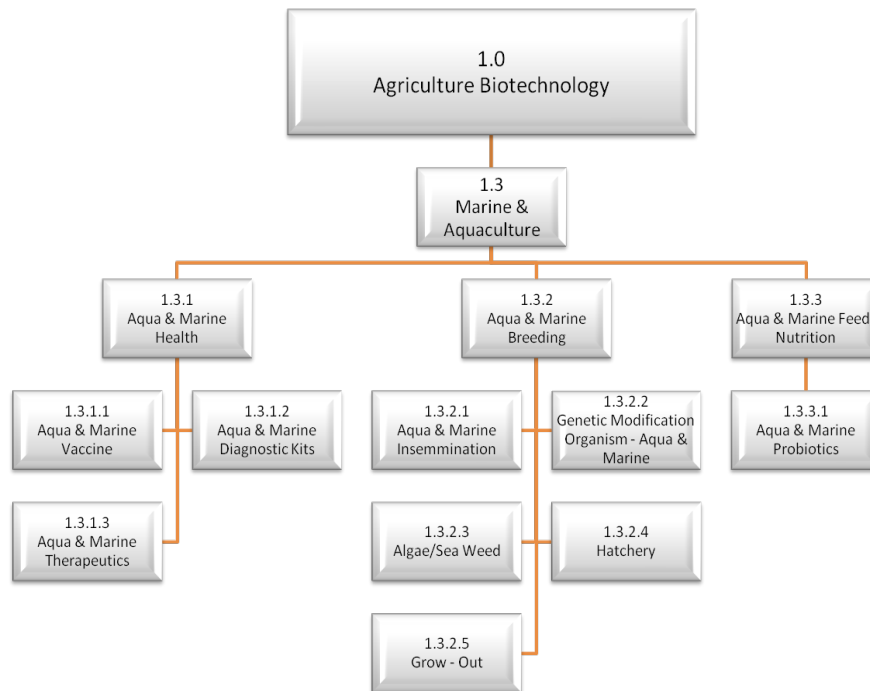


Figure 5: Agricultural Biotechnology (Marine and Aquaculture) Focus Areas

Aquaculture includes many different types of farming. The industry produces hatchery shellfish and fish for release into the wild, as well as the production of shellfish and fish for consumption. Marine aquaculture also encompasses the production of fish for the pet industry, as well as many plants used by nutritional and pharmaceutical companies.

Fisheries are harvested for their commercial, recreational or subsistence value. They can be saltwater or freshwater, wild or farmed. Marine fishery involves the capture of wild fish whereas; aquaculture is the raising fish through fish farming. Close to 90% of the world's fishery catches come from oceans and seas, as opposed to inland waters. Most marine fisheries are based near the coast. This is not only because harvesting from relatively shallow waters is easier than in the open ocean, but also because fish are much more abundant near the coastal shelf, due to coastal upwelling and the abundance of nutrients available there. In Malaysia, the fisheries sub sector is a very important component of the overall marine biotechnology area.

4.1.4 Natural Products

A natural product is a chemical compound or substance produced by a living organism - found in nature that usually has a nutraceutical or biological activity for use in drug discovery and drug design.

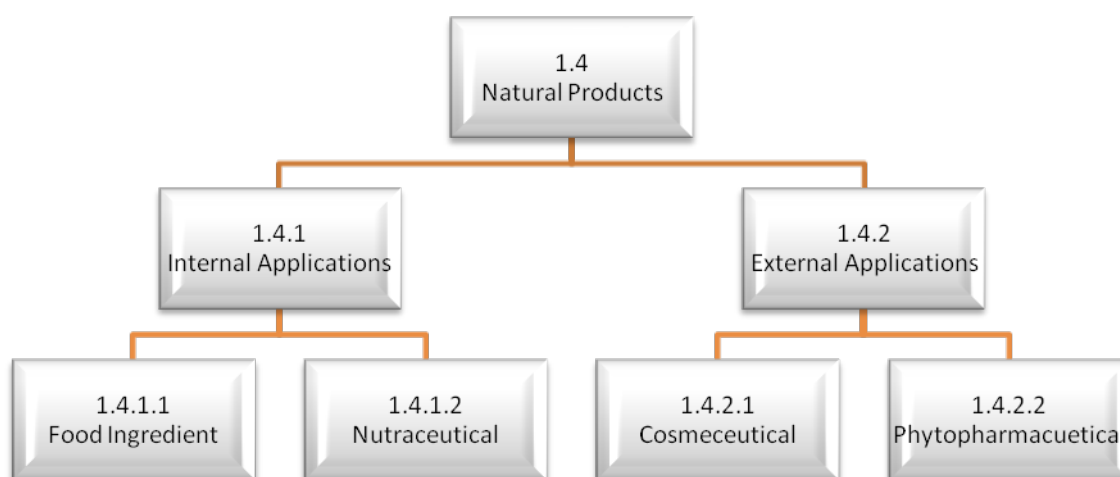


Figure 6: Agricultural Biotechnology (Natural Products) Focus Areas

Here in Malaysia, natural products have exhibited its potential as new growth area. Natural products are referred to herbs, plant extracts and other traditional medicine.

With the Earth's oldest rainforest and 13,050 indigenous species including 1,200 species of medicinal plants, Malaysia is classified as one of the world's twelve "mega-diversity" countries and is the fourth most bio-diverse nation in Asia after India, China, and Indonesia. The country's natural resources, coupled with its unique melding of the traditional remedies of the Malay, Chinese, and Indian cultures, position Malaysia as a valuable source of extracts and materials for the preparation of new formulae to ensure their growth and high yield will be sustainable for viable resource-based manufacturing and downstream activities.

Malaysia presently has 142 herbal manufacturers with GMP qualifications operating. Its GMP and TCM guidelines are in accordance with those of the WHO, UNIDO, and the pharmaceutical Cooperation Scheme (PIC/S).

According to Biotechcorp, the natural product sector is determined as a new growth area for agriculture biotechnology. The production of herbs and spices grew from 7,098 MT in 2005 to 13,251 MT in 2007.

Annual sales for Malaysian herbal products are presently estimated at RM4.6 billion and is expected to expand to RM8.0 billion by 2010. Malaysian herbs are primarily used in health foods and beverages, herbal and traditional medicines, health enhancing products, dietary supplements, flavours and fragrances, cosmetics, and toiletries.

Traditional herbs are making its way as functional food and beverage ingredient. In terms of functional foods, coffee and tea fortified with herbs became very popular in 2005.

The local dietary supplements segment is heavily dependent on imports, especially from the United States and Australia. Vitamins B complex, C, E, multi-vitamins and calcium are popular among Malaysians. Other popular supplements include evening primrose oil, omega-3 fish oil, ginkgo biloba, ginseng, lecithin, royal jelly, spirulina, ginseng and cod liver oil.

4.1.5 Bioinformatics (Agriculture)

Bioinformatics is the application of computer technology to the management of biological information related to Agriculture Biotechnology. Computers are used to gather, store, analyse and integrate biological and genetic information about Plants, Animals, Aqua and Marine creatures and others. The science of Bioinformatics, which is the melding of molecular biology with computer science, is essential to the use of genomic information in understanding human diseases and in the identification of new molecular targets for drug discovery. In recognition of this, many universities, government institutions and pharmaceutical firms have formed bioinformatics groups. For example, Agriculture Bioinformatics can be used for producing high yield low maintenance crops.

4.2 Healthcare Biotechnology

The Healthcare Biotechnology sector is divided into five main subsectors which are Contract Manufacturing Organisation (CMO), Contract Research Organization (CRO), Medical Devices and Diagnostic, Pharmaceuticals and Biopharmaceutical, Therapeutics Technologies (Stem cells, tropical medicine, and infectious diseases) and Bioinformatics. See Figure 7.

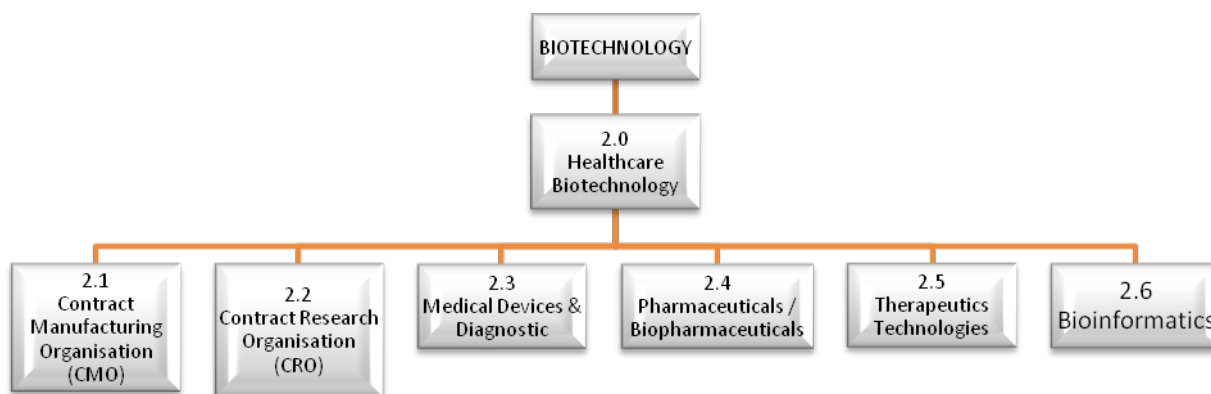


Figure 7: Subsectors of Healthcare Biotechnology

4.2.1 Contract Manufacturing Organisation (CMO)

Contract Manufacturing Organisation (CMO) refers to a company that offers manufacturing services, with volume capabilities ranging from small amounts for preclinical R&D to larger volumes necessary for clinical trials purposes and commercialization.

According to a Malaysian Industrial Development Authority (MIDA) report entitled Investment Opportunities in the Manufacturing and Services Sector in Malaysia 2007, the local industry currently produces about 25 - 30% of the domestic demand and exports to Asia-Pacific Rim countries, the Middle East, Africa and Latin America (total exports of US\$130 million in 2005). Moreover, with Malaysia joining the Pharmaceutical Inspection Convention and Pharmaceutical Inspection Cooperation/ Scheme (PICS) and the large number of GMP production plants, the country's pharmaceutical exports are poised to grow in the coming years and will include increasing potential exports to the European Union.

The countries strong GMP compliance also puts it in good stead to capitalise on the CMO market. It is expected that the next generation biopharmaceutical molecules with lower manufacturing productivity than current small molecules will drive future growth of the CMO market. This is as outsourcing is encouraged as it is more efficient and cost effective. The strengthening of mid-size biopharmaceutical companies, which serve as the engine for a rapidly growing biopharmaceutical pipeline, is further a strong signal for future potential that exists in outsourcing manufacturing.

CMO in Healthcare Biotechnology covers manufacturing of Medical Devices, Biopharmaceutical products, In Vitro Diagnostic and formulation services. See figure 8.

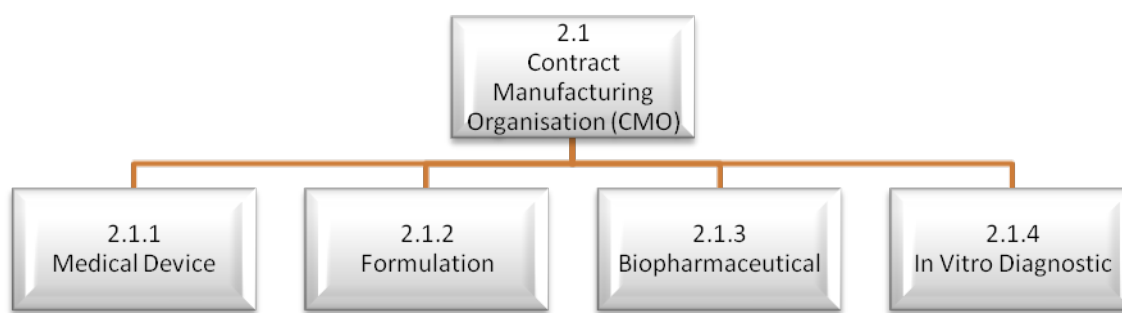


Figure 8: Healthcare Biotechnology (CMO) Focus Areas

Some examples of existing CMO in Malaysia are as follows:

- a. **Pharmaniaga:** Contract manufacturing of >200 types of products (including for US multinationals).
- b. **CCM Duopharma:** Contracts to supply drugs to the Health Ministry worth over RM 30 million per annum.
- c. **Hovid Berhad:** Hovid today has 12 global patents and a presence in 40 countries worldwide. Carotech Berhad, a subsidiary of Hovid Berhad, is involved in the extraction of phytonutrients and biodiesel from crude palm oil.

4.2.2 Clinical Research Organization (CRO)

A company involves in performing clinical research on a contract basis for a pharmaceutical company, research organization, or other health organization. CROs are contracted to perform some or all of the duties by the sponsor for a clinical trial; examples include monitoring the trial, enrolling patients, performing statistical analysis, and writing the protocols. See figure 9.

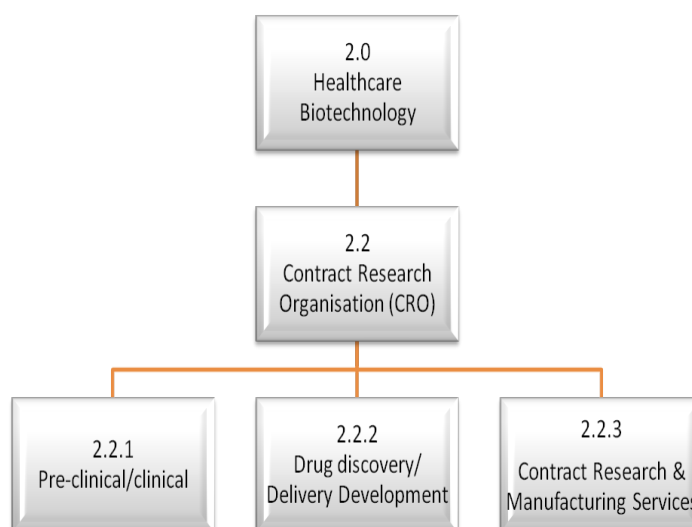


Figure 9: Healthcare Biotechnology (CRO) Focus Areas

Clinical research organisations (CROs) provide substantial global capacity to drug developers and have become a critical contributor to both preclinical and clinical trial activity. Growth in CRO revenue is increasingly from biotechnology companies as opposed to the traditional pharmaceutical companies.

Biotechnology companies currently account for more than half of all molecules in development, but lack a strong development infrastructure compared to their pharmaceutical counterparts. This is one of the most compelling reasons driving research outsourcing to CROs. Additionally, cost pressures pose a constant challenge to both pharmaceuticals and biotechnology companies, and outsourcing to CROs enables them to convert fixed costs related to building and maintaining facilities into variable costs.

CRO revenues are growing rapidly in line with R&D spending, signifying an increasing shift towards outsourced services. The future outlook for CROs remains healthy, driven by robust demand for services across tiers and strong requests for proposal (RFP) from pharmaceuticals and biotechnology companies.

According to Frost & Sullivan, the global contract research market is estimated at USD 15 billion in 2007. Asia contributed USD 1.3 billion in 2006 and this contribution is estimated to reach USD 2 billion by 2010 (a CAGR of 14%). Asia has 14% of the total number of registered study sites globally (up from 6% in 2006), and the top 10 emerging trial countries in Asia are Australia, China, India, South Korea, Taiwan, Hong Kong, Malaysia, Thailand and Singapore.

Clinical trials are offered by most big hospitals; both private and government, as well as universities and research institutions. Additionally, there are also CROs from Taiwan, the US and Singapore (Quintiles, Gleneagles CRC, APEX International Clinical Services, Protech Pharmservices) that have expanded their services to Malaysia.

4.2.3 Devices and Diagnostic

Medical Devices & Diagnostics divided into two focus areas which are In Vitro Diagnostics and Medical Devices. See figure 10.

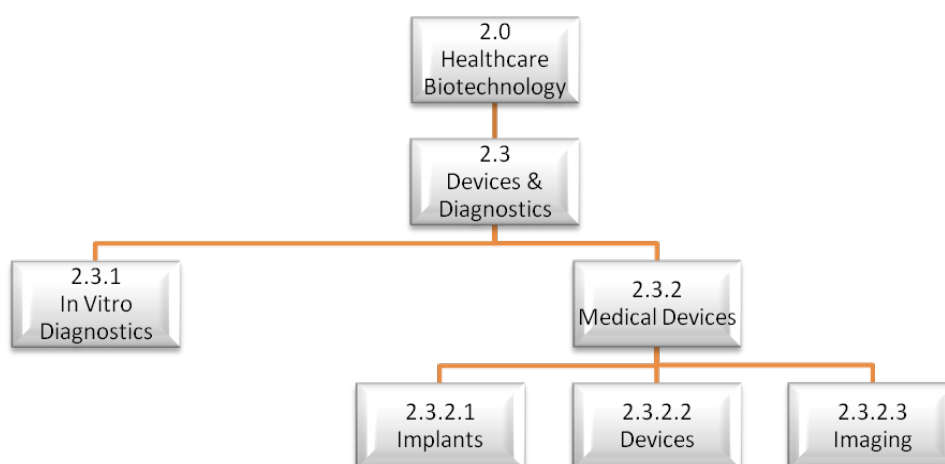


Figure 10: Healthcare Biotechnology (Devices and Diagnostics) Focus Areas

In vitro diagnostics are tests that can detect diseases, conditions, or infections. Some tests are used in laboratory or other health professional settings and other tests are for consumers to use at home.

A medical device is a product which is used for medical purposes in patients, in diagnosis, therapy or surgery. If applied to the body, the effect of the medical device is primarily physical, in contrast to pharmaceutical drugs, which exert a biochemical effect.

According to The Malaysian Investment Development Authority (MIDA), Malaysia continues to maintain its position as the world's leading producer and exporter of medical gloves and catheters, supplying 80 per cent of the world market for catheters, and 60 per cent for rubber gloves.

The production of medical gloves has moved up the value chain, with higher quality and specialty gloves being manufactured such as low protein, powder free medical gloves, safety gloves and clean room gloves.

Other medical device products manufactured in Malaysia include syringes, surgical equipment, blood transfusion sets, blood pressure transducers, dialysis solutions, medical gases, hypodermic /spinal/ AV fistula needles, medical tubes and bags, diagnostic radiographic equipment, orthopaedic products and procedural kits.

Although the medical industry in Malaysia is currently concentrated on the rubber-based products, more companies are moving into the manufacturing of non-rubber based products made from plastics, silicone and metal alloys. The medical devices sector is expanding its manufacturing value chain by moving from basic processes and conventional assembly to product and process research & development, design and prototyping, distribution and logistics.

Most medical products manufactured in Malaysia are self-regulated and conform to internationally recognised quality standards such as the Food and Drug Administration (United States), Department Of Health (United Kingdom) and Bundesgesundheitsamt (Germany).

The Ministry of Health, Malaysia has implemented the medical devices regulatory system in stages. Voluntary registration of medical device establishments was launched on 12 January, 2006. Mandatory registration and full enforcement of the regulation is expected to be in place by 2010. A new department within the Ministry of Health's Engineering Division, the Medical Devices Bureau has been established to oversee the development of the medical devices regulatory system. It has been agreed in principle that the regulations would be aligned to the guidelines drawn up by the ASEAN Harmonisation Working Party (AHWP) and the Global Harmonisation Work Force (GHTF).

According to Biotechcorp, the medical devices sector is one of the priority sectors identified for promotion and further development, given the growing demand for medical products. There is a strong presence of established supporting industries ranging from sterilisation services, sterile medical packaging, precision engineering and tool and die making to contract moulding and assembly and machinery fabrication in Malaysia. The availability of the supporting industries positions Malaysia as an ideal location for the manufacture of medical devices with the potential to be developed into a medical device hub in Asia.

The vast majority of 'high-end' medical equipment are imported from abroad, and the government hopes to encourage production of more advanced devices in the following areas :-

- i. Electro medical equipment;
- ii. Cardiovascular products;
- iii. Orthopaedic products;
- iv. In-vitro diagnostic devices;
- v. Wound care products;
- vi. Ophthalmic products; and
- vii. Home care products.

According to the Association of Malaysian Medical Industries (AMMI), Malaysia enjoys a strong regional position in the medical devices sector; it supplies approximately 80% of the world market for catheters, and 70% for rubber gloves. The medical devices sector is expanding its manufacturing

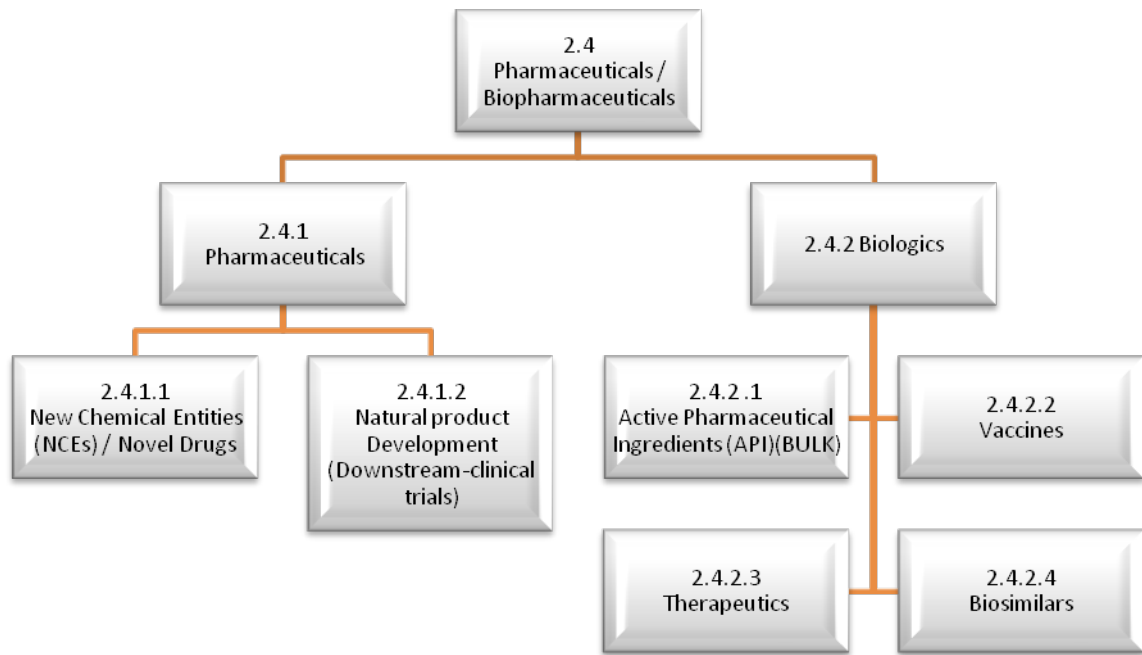
value chain by moving from basic processes and conventional assembly to product and process R&D, design and prototyping, distribution and logistics. In 2007, Malaysia's medical devices industry registered over RM 5 billion (US\$1.5 billion) in revenue, with a year-on-year growth of 8% forecast over the next few years. According to AMMI, there were 179 medical device companies in Malaysia, the bulk in rubber-based medical supplies and consumables. More than 4,000 foreign medical device companies have done contract manufacturing or operations in Malaysia.

4.2.4 Pharmaceuticals/Biopharmaceuticals

Biopharmaceuticals are medical drugs (see pharmacology) produced using biotechnology. They are proteins (including antibodies), nucleic acids (DNA, RNA or antisense oligonucleotides) used for therapeutic or *in vivo* diagnostic purposes, and are produced by means other than direct extraction from a native (non-engineered) biological source.

The large majority of biopharmaceutical products are pharmaceuticals that are derived from life forms. Small molecule drugs are not typically regarded as biopharmaceutical in nature by the industry.

Pharmaceuticals/Biopharmaceuticals are divided into two main subsectors which is Pharmaceuticals and Biologics. Pharmaceutical is related to New Chemical Entities (NCEs) / Novel Drugs and Natural product Development (Downstream-clinical trials). Biologics is related to Active Pharmaceutical Ingredients (API)(BULK), Vaccines, Therapeutics and Biosimilars. See figure 11.

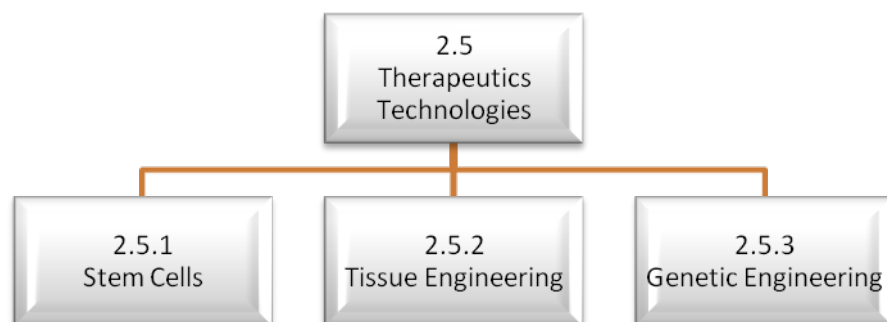


**Figure 11: Healthcare Biotechnology (Pharmaceuticals/ Biopharmaceuticals)
Focus Areas**

4.2.5 Therapeutics Technologies

The term Therapeutics in medicine is related to the branch that deals specifically with the treatment of disease and the art and science of healing. In pharmacology, therapeutics accordingly refers to the use of drugs and the method of their administration in the treatment of disease.

There are three focus areas under the therapeutics technologies which are stem cells, tissue engineering and genetic engineering. See figure 12.



**Figure 12: Healthcare Biotechnology (Therapeutics Technologies)
Focus Areas**

Biological therapeutics derives from living organisms. The utilisation of biomarkers in clinical environment has seen an increasing trend, following the high specificity and high sensitivity demonstrated. The discovery of more biomarkers, springing from different research laboratories, will lead to greater market penetration and adoption. The race in this market focuses on a few key aspects: lower production cost, higher specificity and sensitivity, and broader applications.

Stem cell therapy currently focuses on regenerative medicine-the method of growing a large number of stem cells in culture, and transplanting them to the patient to restore the original organ function. Yet another application area is tissue engineering, which is an emerging market with the increasing importance of reconstructive and aesthetic surgery. Potential applications include:

- Pancreatic islet regeneration for diabetes;
- Autologous stem cell therapy for various cardiovascular diseases;
- Tissue engineered skin substitutes for burns and wound healing;
- Tissue engineered cartilage and chondrocyte therapy for bone and joint diseases;
- Nerve regeneration technologies for neurodegenerative disorders; and
- Hepatocyte transplantation for various liver diseases

Advances in technology play an important role in healthcare globally and certainly in Malaysia as it will prove important in developing both the academic and industry R&D. Following on from this, The BiotechCorp is in the process of acquiring exclusive worldwide license rights for the design and manufacture of nanoparticles from a biotechnology company based in Europe. Additionally, they are also exploring other potential technology acquisition opportunities in the field of antibody microarray and immunomodulators. Also in line with this endeavour, Malaysia is moving to boost and protect intellectual property rights with plans for a US\$1.4 billion fund which reportedly includes the potential establishment of an IP court system.

4.2.6 Bioinformatics (Healthcare)

Bioinformatics is the application of computer technology to the management of biological information related to Healthcare Biotechnology. Computers are used to gather, store, analyse and integrate information of disease, medicine and also the genomes of live creatures. For example, people in Healthcare Bioinformatics will involve in developing novel algorithms for large-scale genomic data analysis focusing on next-generation sequence data, integrative analysis of multi-dimensional cancer genomic data and biomarker discovery. It is being used now and in the foreseeable future in the areas of molecular medicine to help produce better and more customised medicines to prevent or cure diseases.

4.3 Industrial Biotechnology

Industrial Biotechnology in Malaysia is divided into six main subsectors which are Biofuels, Bio-Remediation, Bio-catalysts, Fine and Specialty Chemicals, Biopolymer and Bioinformatics. Each of these subsectors has their own focus areas that will be discussed further. See figure 13.

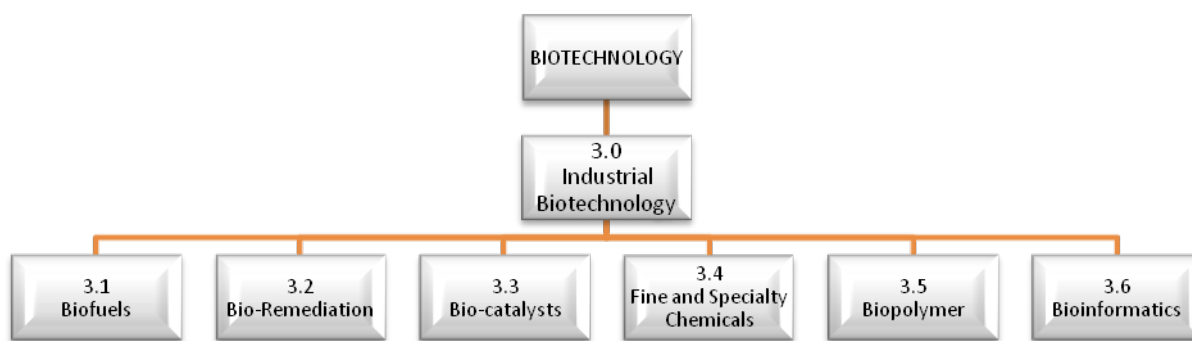


Figure 13: Sub sectors of Industrial Biotechnology

4.3.1 Biofuels

Also known as agro fuel, these fuels are mainly derived from biomass or bio waste. These fuels can be used for any purposes, but the main use for which they have to be brought is in the transportation sector. Most of the vehicles require fuels which provide high power and are dense so that storage is easier. These engines require fuels that are clean and are in the liquid form.

Biofuels represent an alternative fuel source to non-renewable petroleum-based fuels. The creation of the biofuels market was driven by the need to address declining stocks of petroleum reserves and to mitigate the generation of greenhouse gases caused by the consumption of fossil fuels.

The transportation sector accounts for approximately two thirds of the global consumption of petroleum and one third of the carbon dioxide emitted. To reduce the transport sector consumption of fossil fuels subsidies and encourage the use of bio-fuels. The US directly subsidizes both the generation of corn based bioethanol (in 2006 US\$900 million of subsidies were paid) and also provides fuel suppliers with a 51¢ per gallon federal blenders credit. Due the low cost of diesel fuel, it will be critical for the government to subsidize the supply of biofuels.

In 2009 it is estimated that the EU will import one million tonnes of palm oil (mainly from Malaysia and Indonesia) to use in biofuel production (550,000 tonnes for biodiesel and 450,000 tonnes for power generation). The EU alone will account for more than 50 per cent of total global demand for biodiesel.

Forecasts for future demand are given below, based on two main assumptions:

- Governments will maintain regulatory and fiscal support; and
- Sufficient feedstock will be available to not only efficiently produce large quantities of biodiesel but will also support research into technology focused on the efficient utilisation of new and novel biofuels.

There are three main focus areas under Biofuels which are biogas, bioethanol and biodiesel. See figure 14.

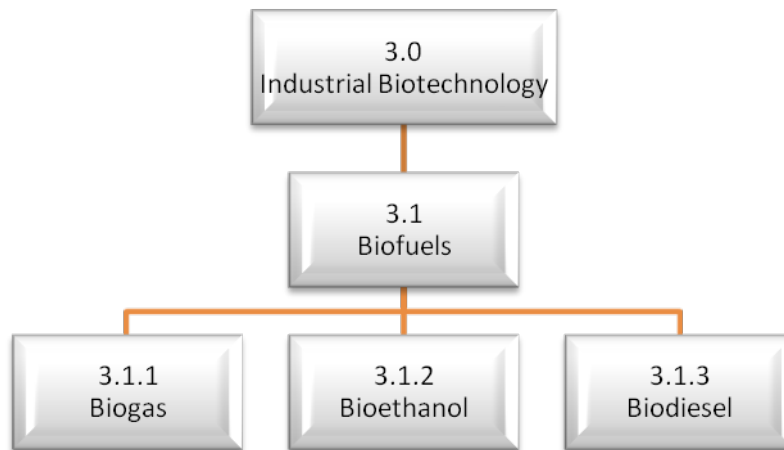


Figure 14: Industrial Biotechnology (Biofuels) Focus Areas

Biogas is produced by the process of anaerobic digestion of organic material by anaerobes. It can be produced either from biodegradable waste materials or by the use of energy crops fed into anaerobic digesters to supplement gas yields. The solid by-product, digestate can be used as a biofuel or a fertilizer. Biogas contains methane and can be recovered from industrial anaerobic digesters and mechanical biological treatment systems.

Oils and gases can be produced from various biological wastes:

- Thermal depolymerisation of waste can extract methane and other oils similar to petroleum; and
- Green Fuel Technologies Corporation developed a patented bioreactor system that uses nontoxic photosynthetic algae to take in smokestacks flue gases and produce bio fuels such as biodiesel, biogas and a dry fuel comparable to coal.
- Farmers can produce biogas from manure from their cows by getting a anaerobic digester (AD).

Bioethanol is produced by the action of microorganisms and enzymes through the fermentation of sugars or starches (easiest), or cellulose (which is more difficult).

Ethanol fuel is the most common biofuel worldwide, particularly in Brazil. Alcohol fuels are produced by fermentation of sugars derived from wheat, corn, sugar beets, sugar cane, molasses and any sugar or starch that alcoholic beverages can be made from (like potato and fruit waste, etc.). The ethanol production methods used are enzyme digestion (to release sugars from stored starches), fermentation of the sugars, distillation and drying. The distillation process requires significant energy input for heat.

Biodiesel is an alternative fuel similar to conventional or 'fossil' diesel. Biodiesel can be produced from straight vegetable oil, animal oil/fats, tallow and waste cooking oil. The process used to convert these oils to biodiesel is called transesterification. This process is described in more detail below. The largest possible source of suitable oil comes from oil crops such as rapeseed, palm or soybean. In the UK rapeseed represents the greatest potential for biodiesel production. Most biodiesel produced at present is produced from waste vegetable oil sourced from restaurants and industrial food producers.

Though oil straight from the agricultural industry represents the greatest potential source it is not being produced commercially simply because the raw oil is too expensive. After the cost of converting it to biodiesel has been added on it is simply too expensive to compete with fossil diesel. Waste vegetable oil can often be sourced for free or sourced already treated for a small price. (The waste oil must be treated before conversion to biodiesel to remove impurities). The result is biodiesel produced from waste vegetable oil can compete with fossil diesel.

Biodiesel has many environmentally beneficial properties. The main benefit of biodiesel is that it can be described as 'carbon neutral'. This means that the fuel produces no net output of carbon in the form of carbon dioxide (CO₂).

Principle Biotechnology Generated Biofuels		
Name and Description	Source	Application
Bioethanol		
Ethanol produced by breakdown of biomass, Brazil produces 50% of global production	<ul style="list-style-type: none"> - Corn (US) - Sugarcane Juice and Molasses (Brazil) - Wheat, barley 	Motor vehicle transport, no vehicle modifications are needed to use less than 10% bioethanol blends
Biodiesel		
Produced from vegetable oils via transesterification process	<ul style="list-style-type: none"> - Soybean oil (US) - Rapeseed oil (Europe) - Palm oil (Malaysia and Indonesia) 	Can be used pure but can cause engine problems, also used as a blend with petroleum diesel
Biogas		
Principally Methane, generated by biodegradation of feedstock	<ul style="list-style-type: none"> - Landfill biomass - Waste Water - Other biomass and feedstock 	Turbine based electricity generation

Source: Biotechcorp

4.3.2 Bio-Remediation

Bio-Remediation covers three main focus areas which are Municipal, Industrial (Inland and Cleaning Product) and Hydrocarbon (Offshore). Basically the Municipal focus area is related to Solid Waste and Sewerage. See figure 15.

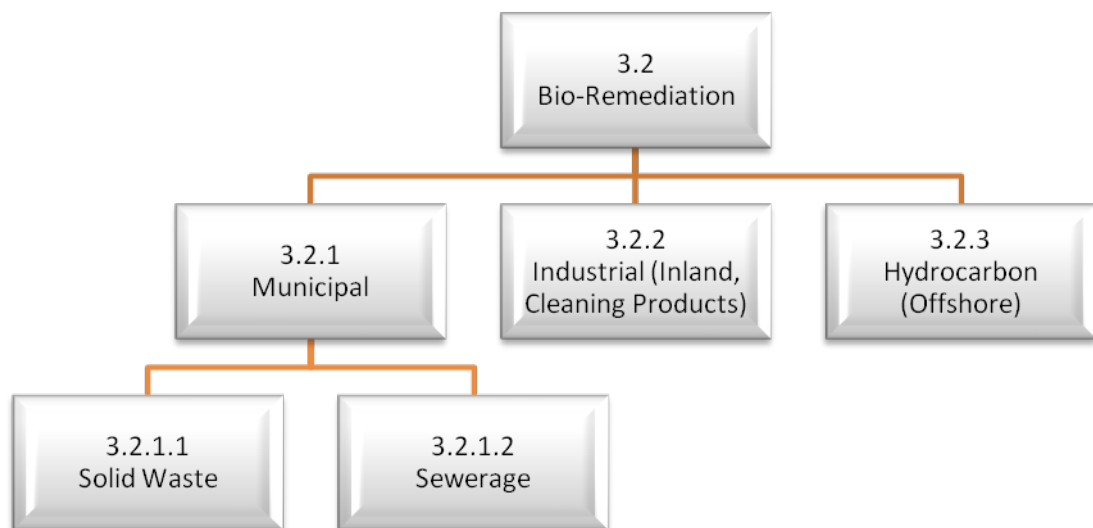


Figure 15: Industrial Biotechnology (Bio-Remediation) Focus Areas

Bioremediation can be defined as any process that uses microorganisms or their enzymes to return the environment altered by contaminants to its original condition. Bioremediation may be employed in order to attack specific contaminants, such as chlorinated pesticides that are degraded by bacteria, or a more general approach may be taken, such as oil spills that are broken down using multiple techniques including the addition of fertilizer to facilitate the decomposition of crude oil by bacteria.

Not all contaminants are readily treated through the use of bioremediation; for example, heavy metals such as cadmium and lead are not readily absorbed or captured by organisms. The integration of metals such as mercury into the food chain may make things worse as organisms bioaccumulate these metals.

However, there are a number of advantages to bioremediation, which may be employed in areas which cannot be reached easily without excavation. For example, hydrocarbon spills (or more specific: gasoline) may contaminate groundwater well below the surface of the ground; injecting the right organisms, in conjunction with oxygen-forming compounds, may significantly reduce concentrations after a period of time. This is much less expensive than excavation followed by burial elsewhere or incineration, and reduces or eliminates the need for pumping and treatment, which is a common practice at sites where hydrocarbons have contaminated groundwater.

Generally, bioremediation technologies can be classified as in situ or ex situ. In situ bioremediation involves treating the contaminated material at the site while ex situ involves the removal of the contaminated material to be treated elsewhere. Some examples of bioremediation technologies are bioventing, land farming, bioreactor, composting, bioaugmentation and biostimulation.

Compost is the decomposed remnants of organic materials (those with plant and animal origins). Compost is used in gardening and agriculture, mixed in with the soil. It improves soil structure, increases the amount of organic matter, and provides nutrients. Compost is a common name for humus, which is the result of the decomposition of organic matter. Decomposition is performed primarily by microbes, although larger creatures such as worms and

ants contribute to the process. Decomposition occurs naturally in all but the most hostile environments, such as buried in landfills or in extremely arid deserts, which prevent the microbes and other decomposers from thriving.

4.3.3 Bio-Catalysts

There are five main focus areas under Bio-Catalysts which are Industrial, Feed and Food, Contract Manufacturing Organisation (CMO), Clinical Research Organization (CRO) and New Discovery. See figure 16.

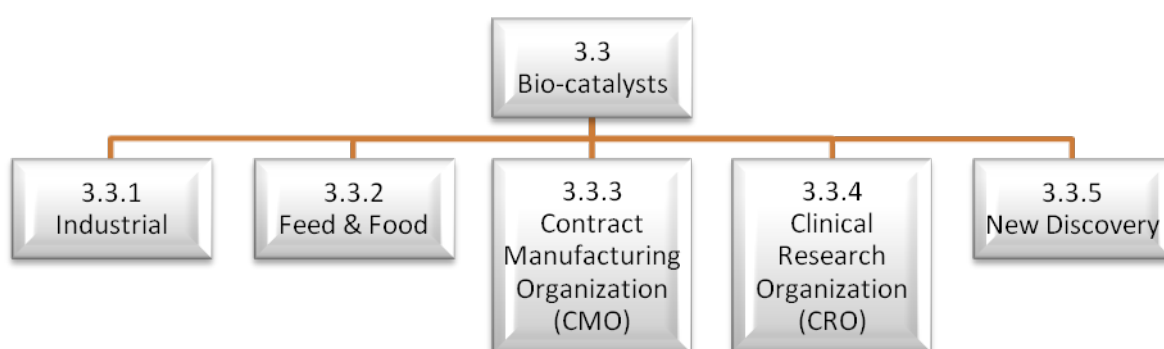


Figure 16: Industrial Biotechnology (Bio-Catalyst) Focus Areas

Bio-catalyst are proteins that act to accelerate chemical reactions by bringing chemical compounds involved in a reaction into close proximity to each other. Bio-catalysts must be produced by living organisms and are typically derived from plant, animal, or microbial sources.

The last few years have witnessed tremendous progress in the development of enzyme technology and enzyme production efficiencies. In industry process bio-catalysts compete with chemical catalyst. While production improvements have reduced the cost of producing bio-catalysts they continue to remain more expensive than chemical catalyst. In recent years bio-catalysts have become more competitive as advances in recombinant DNA and structural protein technology has resulted in creation of bio-catalysts with improved selectivity, energy efficiency and environmental safety.

Bio-catalyst are extensively used in food and beverage production and processing such as sugar and starch processing, dairy products, beer production, wine processing, juice processing and baking. Bio-catalysts employed by the food industry are also called food enzymes. Technical enzymes are defined as those used in more industrial process such as in the manufacture of detergents, textiles, leather, paper and pulp. A third class of bio-catalysts, called animal feed enzymes, is used in feed processing. It is anticipated that technology improvements and production efficiencies will drive the future use of bio-catalysts into other, non-traditional, industrial sectors.

In 2007 revenues generated by the global enzymes market were estimated at \$4.1 billion, of which \$2.71 billion was generated by the sale of industrial enzymes. Technical enzymes and food enzymes are the strongest growing segment of the biocatalyst market. Industry participants need to continuously innovate to remain competitive; hence firms in the sector devote significant efforts in new product R&D and in the acquisition of new technology via merger and acquisition and in-licensing activity.

4.3.4 Fine and Specialty Chemicals

There are four focus areas under the Fine and Specialty Chemicals which are Nutraceuticals, Chemical, Pharma Product (Active Pharmaceutical Ingredients) and Food Ingredients. See figure 17.

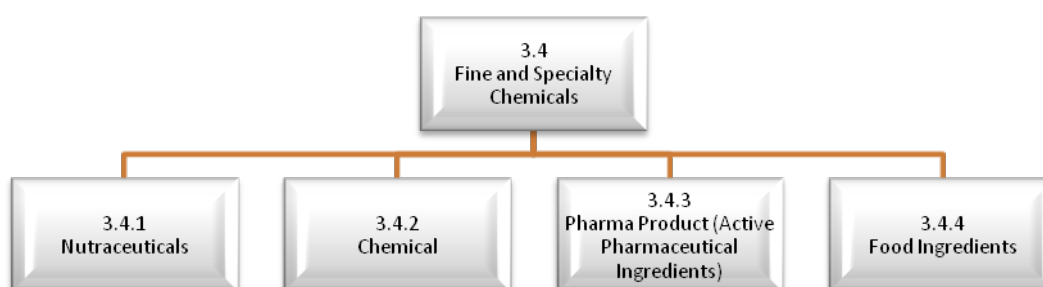


Figure 17: Industrial Biotechnology (Fine and Specialty Chemicals)
Focus Areas

Fine chemicals are pure, single chemical substances that are commercially produced with chemical reactions into highly specialised applications. Fine chemicals produced can be categorised into active pharmaceutical ingredients and their intermediates, biocides, and specialty chemicals for technical applications.

In chemical technology, a distinction is made between bulk chemicals, which are produced in massive quantities by standardised reactions, and fine chemicals, which are custom-produced in smaller quantities for special uses. There is a very large number of fine chemicals that are produced, and thus the chemistries of producing them need to be flexible, whereas the atom economy is not as critical as for bulk chemicals. Owing to the small volume and often-changing chemistry, fine chemicals production is more expensive, generates more waste and requires a higher research investment per kilogram. However, fine chemicals are produced in industrial quantities unlike research chemicals, which are produced only in the laboratory.

With the introduction of new drugs to the market, the chemical identities of pharmaceuticals and their intermediates change often, and they are also produced in small quantities, thus being fine chemicals. Active pharmaceutical ingredients are formulated in a separate factory, where they are compounded with inert pigments, solvents and excipients, and made into dosage forms. Fine chemicals manufacture of pharmaceuticals and intermediates needs to conform to the strict Good Manufacturing Practice standards, and is monitored by the food and drug authorities.

Biocides include pesticides, herbicides and other specialised chemicals that are used in agriculture to inhibit or kill pests and weeds and thus improve crop yields. New biocides are developed somewhat slower than new pharmaceuticals.

Specialty chemicals are produced for technical applications. Inks, performance-enhancing additives, special coatings, and photographic chemicals are common examples. They are generally sold based on differentiated performance-in-use characteristics instead of price per mass, the basis upon which fine chemicals are generally sold.

The bio-catalyst market is an emerging market in Malaysia. The industry in Malaysia caters to a variety of the industrial applications including the production of fine chemicals, oleo chemicals modification, detergent formulation, enzymatic de-inking of waste papers, animal feed formulation and effluent treatment processes.

Some enzymes are produced locally although imports account for a significant proportion of local consumption. The small number of local companies and the presence of an established market offer an opportunity for new entrants seeking to capture a share of the local market. Local producers have leveraged on Malaysia's biodiversity, and protein production from indigenous microbial isolates is being performed using submerged or solid state fermentation processes. Malaysia plays a significant role in the region supply chain for bio-catalysts; in 2008 Malaysia exported around 633 tonnes of repackaged enzymes throughout the region.

The local market is dominated by foreign players, with Novozymes and Dansico/Genecor accounting for 70% of the market.

Bio-Catalysts Isolated From Malaysian Micro-Organisms	
Type of Bio-Catalyst	Micro-Organism
Lipase, lipoprotein lipase	Humicola lanuginosa, Aspergillus niger, Aspergillus flavus, Mucor miehei, Bacillus sp., B. megaterium, Cunninghamella echinulata, Corynebacterium sp., Pseudomonas sp., Geobacillus thermodenitrificans, Pseudomonas paucimobilis
Protease	Bacillus megaterium, Trichoderma sp., Cellulomicrobium sp., Aspergillus niger
Cellulase, β -glucosidase	Aspergillus niger, A. niger subsp. awamori Trichoderma reesei
Xylanase	Aspergillus niger
Lignin degrading enzymes	Phanerochaete chrysosporium, Humicola grisea
Tannase	Aspergillus niger
Mannanase	Aspergillus niger
Phytase	Aspergillus niger
Chitinase	Fusarium sp.

Source: Biotechcorp

4.3.5 Biopolymer

There are three main focus areas under Biopolymer which are Poly Hydroxy Alkanoates (PHA), Poly Lactic Acid (PLA) and Biodegradable Polymer. See figure 18.

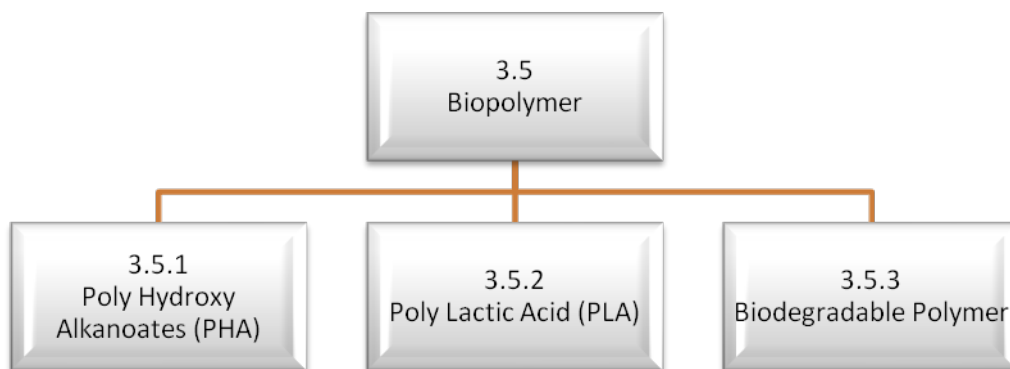


Figure 18: Industrial Biotechnology (Biopolymer) Focus Areas

Biopolymers are polymers produced by living organisms. Cellulose, starch and chitin, proteins and peptides, and DNA and RNA are all examples of biopolymers, in which the monomeric units, respectively, are sugars, amino acids, and nucleotides.

Cellulose is both the most common biopolymer and the most common organic compound on Earth. About 33 percent of all plant matter is cellulose (the cellulose content of cotton is 90 percent and that of wood is 50 percent).

Poly Hydroxy Alkanoates (PHA) are linear polyesters produced in nature by bacterial fermentation of sugar or lipids. They are produced by the bacteria to store carbon and energy. More than 150 different monomers can be combined within this family to give materials with extremely different properties. These plastics are biodegradable and are used in the production of bioplastics.

They can be either thermoplastic or elastomeric materials, with melting points ranging from 40 to 180 °C.

The mechanical and biocompatibility of PHA can also be changed by blending, modifying the surface or combining PHA with other polymers,

enzymes and inorganic materials, making it possible for a wider range of applications.

Polylactic acid or polylactide (PLA) is a biodegradable, thermoplastic, aliphatic polyester derived from renewable resources, such as corn starch (in the U.S.) or sugarcane (rest of world). Although PLA has been known for more than a century, it has only been of commercial interest in recent years, in light of its biodegradability.

Biodegradable polymers are niche market materials finding focussed applications, including agricultural applications such as mulch films, flowerpots and controlled-release fertilisers and packaging items such as carrier bags and food wrapping and containers.

They have the potential to provide a solution to a range of environmental concerns: decreasing availability of landfill space, declining petrochemical sources, and also offer an alternative option to recycling.

4.3.6 Bioinformatics (Industrial)

Bioinformatics is the application of computer technology to the management of biological information related to Industrial Biotechnology. Computers are used to gather, store, analyse and integrate biological and genetic information about microb, enzyme, polymer and others. The science of Bioinformatics, which is the melding of molecular biology with computer science, is essential to the use of microb, enzyme, polymer and other information in understanding their characteristics and their usage in the industry. In recognition of this, many universities, government institutions and biotechnology related firms have formed bioinformatics groups. For example, information provided by Industrial Bioinformatics can be used in identifying waste cleanup bacteria.

5.0 METHODOLOGY OF OCCUPATIONAL ANALYSIS IN BIOTECHNOLOGY BASED INDUSTRY

In conducting the occupational analysis, several brainstorming sessions were held primarily to strategize the Plan of Action in accordance with guidelines as presented by JPK in term of scope of study, time frame and representation by panel of biotechnology experts from both public and private sector as stipulated in the letter of offer.

After several discussion and brainstorming sessions, a Plan of Action was formulated taking into consideration the activities and time frame required. The details of the Plan of Action are as in the Annex 1.

5.1 Literature Search

As outlined by the guidelines, a literature search on the Biotechnology based industry was carried out to get some insight on the scope, policy, program, activities in the context of Malaysian scenario. The scope covered under this search includes background of the sector, the definition of Biotechnology, current analysis of the sector/sub sector, current status of the Biotechnology based industry sector and Policies and Development Plan to Promote Biotechnology.

5.2 Identifying Industry and Public Players

The literature search findings were used as a guide to identify the scope of occupational study and analysis.

5.3 Establish Contact with the Biotechnology Based Industry Players

A pool of biotechnology experts from the industry and public sector has been contacted. Some kind of working relationship has been established with these experts. The list of experts is in Annex 2.

5.4 Analysing the Information

Based on the activities done as above, substantial data and information were collected. The data and information were discussed and analysed in several in-house workshop attended by selected key person or experts from public and industry player.

During this session, attempts to reframe Biotechnology based industry in Malaysia using the following framework:

- i. Scope of the Biotechnology based industry sector and its subsector;
- ii. Main area;
- iii. Major occupational group of the industry;
- iv. Job title;
- v. Hierarchy structure (Level 1 – 8); and
- vi. Occupational definition.

5.5 Organise Workshop with Panels

Several workshops on the Biotechnology based industry were held and activities covered as follows:

1. 15 – 16 Mei 2010 at Idaman Jauhari Training Centre, Seremban 2, Negeri Sembilan. A total of 9 experts attended the workshop. The activities carried were:
 - Presentation of preliminary findings;
 - Outline of job title;
 - Career structure;
 - Hierarchy structure (Level 1 – 8);
 - Occupational definition; and
 - Gathering information from the internet.
2. 5 - 6 June 2010 at Idaman Jauhari Training Centre, Seremban 2, Negeri Sembilan and 9 experts attended. The activities carried out were:
 - Review and refining of occupational definition, hierarchy structure; and
 - Literature review.
3. 26 – 27 June 2010 at Idaman Jauhari Training Centre, Seremban 2, Negeri Sembilan and 8 experts attended. The activities carried out were:
 - Review and refining of occupational definition, hierarchy structure; and
 - Validation and verification.
4. 7 – 8 August 2010 at Idaman Jauhari Training Centre, Seremban 2, Negeri Sembilan and 8 experts attended. The activities carried out were:
 - Validation and verification; and
 - Proof read.

6.0 Findings

There are two existing Occupational Analysis (OA) related to the Biotechnology Industry in Malaysia. Our panel members have reviewed those two OA and concluded that the existing OA are not in line with the current Biotechnology Industry in this country in term of the sub sectors and the job titles. Based on the first brainstorming session to develop this new Occupational analysis, the findings of this study are as follows:

6.1 The scope of Biotechnology Industry in Malaysia

The Biotechnology based industry sector in Malaysia is categorically divided into three (3) major sectors namely Agriculture Biotechnology, Healthcare Biotechnology and Industrial Biotechnology.

For the Agriculture Biotechnology, there are five main subsectors which are Crops, Live stocks, Marine and Aquaculture, Natural Products and Bioinformatics.

For the Healthcare Biotechnology, there are six main sub sectors which are Contract Manufacturing Organisation (CMO), Contract Research Organization (CRO), Medical Devices and Diagnostic, Pharmaceuticals and Biopharmaceutical, Therapeutics Technologies (Stem cells, tropical medicine, and infectious diseases) and Bioinformatics.

For the Industrial Biotechnology, there are six main sub sectors which are Biofuels, Bio-Remediation, Bio-catalysts, Fine and Specialty Chemicals, Biopolymer and Bioinformatics.

6.2 Job Area in Biotechnology Industry

It has been observed that, there are eight (8) main job areas identified for each subsector which are as follow:

1. Research and Development;
2. Production/ Reproduction;
3. Sales and Marketing;
4. Logistic and Warehousing;
5. Quality Assurance/ Quality Control;

6. Health, Safety & Environment;
7. Regulatory Affairs; and
8. Engineering.

6.3 Job Titles in Biotechnology Industry

Based on brainstorming sessions held with expert panels from Biotechnology based industry, the total 317 job titles were indentified with 111 of them are classified as critical and 206 job titles are classified as non-critical.

6.3.1 Job Titles for Agriculture Biotechnology

For the Agriculture Biotechnology, there are eight (8) Subs - Job Areas under the Research and Development (R&D) Division, the sub – job areas are the following:

1. Product Enhancement;
2. Product Development;
3. Seed / Mutation Breeding;
4. Tissue Culture;
5. GMO – Crops;
6. Clinical/ Pre-clinical;
7. Artificial Insemination (Live stocks/ Aqua & Marine); and
8. GMO (Live stocks/ Aqua & Marine).

There are forty seven (47) job titles identified under Research & Development (R&D) Division.

For the Production/ Reproduction Division, there are six (6) subs – job areas as the following:

1. Administration;
2. Processing;
3. Packaging;
4. Seed/Mutation Breeding;
5. Tissue Culture;
6. Live stocks/Aqua & Marine.

There are thirty one (31) job titles identified under Production/ Reproduction Division.

For the Sales and Marketing Division, there are four (4) subs – job areas as the following:

1. Customer Service;
2. Technical Services;
3. Marketing; and
4. Sales.

There are thirteen (13) job titles identified under Sales and Marketing Division.

For the Logistics and Warehousing Division, there are two (2) subs – job areas as the following:

1. Logistics; and
2. Warehouse.

There are ten (10) Job titles identified under Logistics & Warehousing Division.

For the Quality Assurance/ Quality Control/ Quality Management Division, there are three (3) subs – job areas as the following:

1. Quality Assurance;
2. Quality Control; and
3. Quality Management.

There are eleven (11) job titles identified under Quality Assurance/ Quality Control/ Quality Management Division.

For the Health, Safety and Environment Division, there are 2 (two) sub – job areas as the following:

1. Environment; and
2. Health & Safety.

There are ten (10) job titles identified under Health, Safety & Environment Division.

For the Regulatory Affairs Division, there are 2 (two) subs – job areas as the following:

1. Compliance; and
2. Regulatory.

There are six (6) job titles identified under Regulatory Affairs Division for Agriculture Biotechnology.

For the Engineering Division, there are 3 (three) subs – job areas as the following:

1. Maintenance;
2. Project Engineering; and
3. Electrical & Instrumentation.

There are eleven (11) job titles identified under Engineering Division.

For the Bioinformatics under Agriculture Biotechnology, there are four (4) job titles identified.

6.3.2 Job Titles for Healthcare Biotechnology

For the Healthcare Biotechnology, there are three (3) Subs - Job Areas under the Research & Development (R&D) Division, the sub – job areas are the following:

1. Product Enhancement;
2. Product Development; and
3. Clinical/ Pre-clinical.

There are thirteen (13) job titles identified under Research and Development (R&D) Division.

For the Production Division, there are three (3) subs – job areas as the following:

1. Administration;
2. Processing; and
3. Packaging.

There are eleven (11) Job titles identified under Production/ Reproduction Division.

For the Sales and Marketing Division, there are four (4) subs – job areas as the following:

1. Customer Service;
2. Technical Services;
3. Marketing; and
4. Sales.

There are thirteen (13) job titles identified under Sales and Marketing Division.

For the Logistics and Warehousing Division, there are two (2) subs – job areas as the following:

1. Logistics
2. Warehouse

There are ten (10) job titles identified under Logistics and Warehousing Division.

For the Quality Assurance/ Quality Control/ Quality Management Division, there are three (3) subs – job areas as the following:

1. Quality Assurance;
2. Quality Control; and
3. Quality Management.

There are eleven (11) job titles identified under Quality Assurance/ Quality Control/ Quality Management Division.

For the Health, Safety & Environment Division, there are 2 (two) subs – job areas as the following:

1. Environment; and
2. Health & Safety.

There are ten (10) job titles identified under Health, Safety and Environment Division.

For the Regulatory Affairs Division, there are 2 (two) subs – job areas as the following:

1. Compliance; and
2. Regulatory.

There are six (6) Job titles identified under Regulatory Affairs Division for Healthcare Biotechnology.

For the Engineering Division, there are 3 (three) subs – job areas as the following:

1. Maintenance;
2. Project Engineering; and
3. Electrical & Instrumentation.

There are eleven (11) job titles identified under Engineering Division.

For the Bioinformatics under Healthcare Biotechnology, there are four (4) Job titles identified.

6.3.3 Job Titles for Industrial Biotechnology

For the Industrial Biotechnology, there are three (3) Subs - Job Areas under the Research and Development (R&D) Division, the sub – job areas are the following:

1. Product Enhancement;
2. Product Development; and

There are nine (9) job titles identified under Research and Development (R&D) Division.

For the Production Division, there are three (3) subs – job areas as the following:

1. Administration;
2. Processing; and
3. Packaging.

There are eleven (11) Job titles identified under Production/Reproduction Division.

For the Sales & Marketing Division, there are four (4) subs – job areas as the following:

1. Customer Service;
2. Technical Services;
3. Marketing; and
4. Sales.

There are thirteen (13) job titles identified under Sales and Marketing Division.

For the Logistics and Warehousing Division, there are two (2) subs – job areas as the following:

1. Logistics; and
2. Warehouse.

There are ten (10) job titles identified under Logistics and Warehousing Division.

For the Quality Assurance/ Quality Control/ Quality Management Division, there are three (3) subs – job areas as the following:

1. Quality Assurance;
2. Quality Control; and
3. Quality Management.

There are eleven (11) job titles identified under Quality Assurance/ Quality Control/ Quality Management Division.

For the Health, Safety and Environment Division, there are 2 (two) subs – job areas as the following:

1. Environment; and
2. Health & Safety.

There are ten (10) Job titles identified under Health, Safety and Environment Division.

For the Regulatory Affairs Division, there are 2 (two) subs – job areas as the following:

1. Compliance; and
2. Regulatory.

There are six (6) Job titles identified under Regulatory Affairs Division for Healthcare Biotechnology.

For the Engineering Division, there are 3 (three) subs – job areas as the following:

1. Maintenance;
2. Project Engineering; and
3. Electrical and Instrumentation.

There are eleven (11) job titles identified under Engineering Division.

For the Bioinformatics under Industrial Biotechnology, there are four (4) job titles identified.

6.4 Critical and Non-Critical Job Titles

The job titles identified are categorised as critical and non-critical. The job is categorised as critical because of insufficient supply of workers in that field because the job needs specialised skilled workers with high demand in the industry. Meanwhile, jobs categorised as non-critical job because these jobs are less in demand in the industry. Table 1.0 shows the summarisation of critical and non-critical job.

Table 1.0: Total identified critical and non-critical job titles

Job Titles	Total
Critical	111
Non-Critical	206
Total	317

6.4.1 List of Job Titles for Agriculture Biotechnology

6.4.1.1 Critical job titles

1	Plant Tissue Culture Assistant Technician (Agriculture)	L2
2	Seedling Assistant Technician (Agriculture)	L2
3	Aqua and Marine Genetic Technician (Agriculture)	L3
4	Aqua and Marine Reproduction Technician (Agriculture)	L3
5	Aqua and Marine Technician (Agriculture)	L3
6	Plant Tissue Culture Technician (Agriculture)	L3
7	Seedling Technician (Agriculture)	L3
8	Veterinary Reproduction Technician (Agriculture)	L3
9	Veterinary Technician (Agriculture)	L3
10	Waste Treatment Technician(Agriculture)	L3
11	R&D Technician (Agriculture)	L3
12	Assistant Agronomist (R&D) (Agriculture)	L4
13	Animal Genetic Assistant Technologist (Agriculture)	L4
14	Aqua and Marine Genetic Assistant Technologist (Agriculture)	L4
15	Aqua and Marine Reproduction Assistant Technologist (Agriculture)	L4
16	Assistant Bioinformatician (Agriculture)	L4
17	Compliance Assistant Executive (Agriculture)	L4
18	Food Assistant Technologist (Agriculture)	L4
19	Regulatory Affairs Assistant Executive (Agriculture)	L4
20	Clinical Research Officer (Agriculture)	L4
21	Plant Propagator Supervisor (Agriculture)	L4
22	Tissue Culturist (Agriculture)	L4
23	Waste Treatment Supervisor (Agriculture)	L4
24	Research Assistant (Agriculture)	L4
25	Assistant Agronomist (Production) (Agriculture)	L4
26	Agronomist (R&D) (Agriculture)	L5
27	Agronomist (Production) (Agriculture)	L5
28	Animal Genetic Technologist (Agriculture)	L5

29	Aqua and Marine Reproduction Technologist (Agriculture)	L5
30	Aqua and Marine Technologist (Agriculture)	L5
31	Bioinformatician (Agriculture)	L5
32	Clinical Research Associate (Agriculture)	L5
33	Compliance Executive (Agriculture)	L5
34	Customer Service Executive (Agriculture)	L5
35	Food Technologist (Agriculture)	L5
36	GMO Plant Technologist (R&D) (Agriculture)	L5
37	HS Executive (Agriculture)	L5
38	Logistic Executive (Agriculture)	L5
39	Marketing Executive (Agriculture)	L5
40	Production Executive (Agriculture)	L5
41	Quality Assurance Executive (Agriculture)	L5
42	Quality Control Executive (Agriculture)	L5
43	Research and Development Executive (Agriculture)	L5
44	Regulatory Affairs Executive (Agriculture)	L5
45	Sales Executive (Agriculture)	L5
46	Technical Service Executive (Agriculture)	L5
47	Veterinary Reproduction Technologist (Agriculture)	L5
48	Veterinary Technologist (Agriculture)	L5
49	Warehouse Executive (Agriculture)	L5
50	Plant Technologist (R&D) (Agriculture)	L5
51	Plant Technologist (Production) (Agriculture)	L5
52	Aqua & Marine Genetic Technologist (Agriculture)	L5
53	Research Officer (Agriculture)	L5
54	Animal Genetic Researcher (Agriculture)	L6
55	Aqua and Marine Researcher (Agriculture)	L6
56	Customer Service Manager (Agriculture)	L6
57	Quality Assurance Manager (Agriculture)	L6
58	Veterinary Researcher (Agriculture)	L6
59	Aqua and Marine Geneticist Principal (Agriculture)	L7
60	Plant Breeder (R&D) (Agriculture)	L7

61	Plant Breeder (Production) (Agriculture)	L7
----	--	----

6.4.1.2 Non critical job titles

1	General Worker (Agriculture)	L1
2	Store Handler (Agriculture)	L1
3	Aqua and Marine Handler (Agriculture)	L2
4	Agriculture Assistant Technician (Agriculture)	L2
5	Engineering Assistant Technician (Agriculture)	L2
6	Forklift Driver (Agriculture)	L2
7	Live stock Handler (Agriculture)	L2
8	Packaging Leader (Agriculture)	L2
9	Production Technician (Agriculture)	L2
10	Quality Control Inspector (Agriculture)	L2
11	Waste Treatment Assistant (Agriculture)	L2
12	Agriculture Technician (Agriculture)	L3
13	Animal Genetic Technician (Agriculture)	L3
14	Engineering Technician (Agriculture)	L3
15	HS Technician (Agriculture)	L3
16	Lab Assistant (Agriculture)	L3
17	Lab Technician (Agriculture)	L3
18	Process Leader (Agriculture)	L3
19	Production Assistant (Agriculture)	L3
20	Quality Control Technician (Agriculture)	L3
21	Shift Leader (Agriculture)	L3
22	Storekeeper (Agriculture)	L3
23	Aqua & Marine Assistant Technologist (Agriculture)	L4
24	Assistant Technologist (Agriculture)	L4
25	Veterinary Reproduction Assistant Technologist (Agriculture)	L4
26	Veterinary Assistant Technologist (Agriculture)	L4
27	Customer Service Assistant (Agriculture)	L4
28	HS Officer (Agriculture)	L4
29	Logistic Assistant (Agriculture)	L4

30	Marketing Assistant (Agriculture)	L4
31	Production Supervisor (Agriculture)	L4
32	Quality Assurance Assistant (Agriculture)	L4
33	Quality Control Assistant (Agriculture)	L4
34	Research and Development Supervisor(Agriculture)	L4
35	Sales Assistant (Agriculture)	L4
36	Technical Service Assistant (Agriculture)	L4
37	Warehouse Supervisor (Agriculture)	L4
38	Document Controller (Agriculture)	L5
39	Environmental Executive (Agriculture)	L5
40	Instrumentation Technologist (Agriculture)	L5
41	Maintenance Technologist (Agriculture)	L5
42	Mechanical Technologist (Agriculture)	L5
43	Process Technologist (Agriculture)	L5
44	Project Technologist (Agriculture)	L5
45	Aqua and Marine Genetic Researcher (Agriculture)	L6
46	Aqua and Marine Reproduction Manager (Agriculture)	L6
47	Bioinformatics Manager (Agriculture)	L6
48	Clinical Research Manager (Agriculture)	L6
49	Culture Lab Manager (Agriculture)	L6
50	Electrical and Instrumentation Manager (Agriculture)	L6
51	Environmental Manager (Agriculture)	L6
52	GMO Lab Manager (R&D) (Agriculture)	L6
53	Live stocks Reproduction Manager (Agriculture)	L6
54	Logistic Manager (Agriculture)	L6
55	Maintenance Manager (Agriculture)	L6
56	Marketing Manager (Agriculture)	L6
57	Nursery Manager (R&D) (Agriculture)	L6
58	Occupational Health and Safety Manager (Agriculture)	L6
59	Production Manager (Agriculture)	L6
60	Project Engineering Manager (Agriculture)	L6
61	Quality Control Manager (Agriculture)	L6

62	Quality Management Manager (Agriculture)	L6
63	Research and Development Manager (Agriculture)	L6
64	Regulatory Affairs Manager (Agriculture)	L6
65	Sales Manager (Agriculture)	L6
66	Scientist (Agriculture)	L6
67	Technical Service Manager (Agriculture)	L6
68	Warehouse Manager (Agriculture)	L6
69	Nursery Manager (Production) (Agriculture)	L6
70	Animal Geneticist Principal (Agriculture)	L7
71	Aqua and Marine Research Principal (Agriculture)	L7
72	Bioinformatics Director (Agriculture)	L7
73	Clinical Research Director (Agriculture)	L7
74	Engineering and Maintenance Director (Agriculture)	L7
75	HSE Director (Agriculture)	L7
76	Production Director (Agriculture)	L7
77	Quality Assurance/Quality Control/Quality Management Director (Agriculture)	L7
78	Research and Development Principal (Agriculture)	L7
79	Regulatory Director (Agriculture)	L7
80	Sales and Marketing Director (Agriculture)	L7
81	Supply Chain Director (Agriculture)	L7
82	Veterinary Research Principal (Agriculture)	L7

6.4.2 List of Job Titles for Healthcare Biotechnology

6.4.2.1 Critical Job Titles

1	Waste Treatment Technician (Healthcare)	L3
2	Research and Development Technician (Healthcare)	L3
3	Assistant Bioinformatician (Healthcare)	L4
4	Compliance Assistant Executive (Healthcare)	L4
5	Regulatory Affairs Assistant Executive (Healthcare)	L4
6	Clinical Research Officer (Healthcare)	L4
7	Waste Treatment Supervisor (Healthcare)	L4

8	Research Assistant (Healthcare)	L4
9	Bioinformatician (Healthcare)	L5
10	Clinical Research Associate (Healthcare)	L5
11	Compliance Executive (Healthcare)	L5
12	Customer Service Executive (Healthcare)	L5
13	HS Executive (Healthcare)	L5
14	Logistic Executive (Healthcare)	L5
15	Marketing Executive (Healthcare)	L5
16	Production Executive (Healthcare)	L5
17	Quality Assurance Executive (Healthcare)	L5
18	Quality Control Executive (Healthcare)	L5
19	Research and Development Executive (Healthcare)	L5
20	Regulatory Affairs Executive (Healthcare)	L5
21	Sales Executive (Healthcare)	L5
22	Technical Service Executive (Healthcare)	L5
23	Warehouse Executive (Healthcare)	L5
24	Research Officer (Healthcare)	L5
25	Customer Service Manager (Healthcare)	L6
26	Quality Assurance Manager (Healthcare)	L6

6.4.2.2 Non critical job titles

1	General Worker (Healthcare)	L1
2	Store Handler (Healthcare)	L1
3	Engineering Assistant Technician (Healthcare)	L2
4	Forklift Driver (Healthcare)	L2
5	Packaging Leader (Healthcare)	L2
6	Production Technician (Healthcare)	L2
7	Quality Control Inspector (Healthcare)	L2
8	Waste Treatment Assistant (Healthcare)	L2
9	Assistant Technologist (Healthcare)	L3
10	Customer Service Assistant (Healthcare)	L3
11	Engineering Technician (Healthcare)	L3

12	HS Technician (Healthcare)	L3
13	Lab Technician (Healthcare)	L3
14	Process Leader (Healthcare)	L3
15	Production Assistant (Healthcare)	L3
16	Quality Control Technician (Healthcare)	L3
17	Shift Leader (Healthcare)	L3
18	Storekeeper (Healthcare)	L3
19	Document Controller (Healthcare)	L4
20	Environmental Executive (Healthcare)	L4
21	HS Officer (Healthcare)	L4
22	Instrumentation Technologist (Healthcare)	L4
23	Logistic Assistant (Healthcare)	L4
24	Maintenance Technologist (Healthcare)	L4
25	Marketing Assistant (Healthcare)	L4
26	Mechanical Technologist (Healthcare)	L4
27	Production Supervisor (Healthcare)	L4
28	Quality Assurance Assistant (Healthcare)	L4
29	Quality Control Assistant (Healthcare)	L4
30	Research and Development Supervisor (Healthcare)	L4
31	Sales Assistant (Healthcare)	L4
32	Technical Service Assistant (Healthcare)	L4
33	Warehouse Supervisor (Healthcare)	L4
34	Bioinformatics Manager (Healthcare)	L5
35	Clinical Research Manager (Healthcare)	L5
36	Process Technologist (Healthcare)	L5
37	Project Technologist (Healthcare)	L5
38	Bioinformatics Director (Healthcare)	L6
39	Clinical Research Director (Healthcare)	L6
40	Electrical and Instrumentation Manager (Healthcare)	L6
41	Engineering and Maintenance Director (Healthcare)	L6
42	Environmental Manager (Healthcare)	L6
43	Logistic Manager (Healthcare)	L6

44	Maintenance Manager (Healthcare)	L6
45	Marketing Manager (Healthcare)	L6
46	Occupational Health and Safety Manager (Healthcare)	L6
47	Production Manager (Healthcare)	L6
48	Project Engineering Manager (Healthcare)	L6
49	Quality Control Manager (Healthcare)	L6
50	Quality Management Manager (Healthcare)	L6
51	Research and Development Manager (Healthcare)	L6
52	Regulatory Affairs Manager (Healthcare)	L6
53	Sales Manager (Healthcare)	L6
54	Scientist (Healthcare)	L6
55	Technical Service Manager (Healthcare)	L6
56	Warehouse Manager (Healthcare)	L6
57	HSE Director (Healthcare)	L7
58	Production Director (Healthcare)	L7
59	Quality Assurance/Quality Control/Quality Management Director (Healthcare)	L7
60	Research and Development Principal (Healthcare)	L7
61	Regulatory Director (Healthcare)	L7
62	Sales and Marketing Director (Healthcare)	L7
63	Supply Chain Director (Healthcare)	L7

6.4.3 List of Job Titles for Industrial Biotechnology

6.4.3.1 Critical Job Titles

1	Waste Treatment Technician (Industrial)	L3
2	Research and Development Technician (Industrial)	L3
3	Assistant Bioinformatician (Industrial)	L4
4	Compliance Assistant Executive (Industrial)	L4
5	Regulatory Affairs Assistant Executive (Industrial)	L4
6	Waste Treatment Supervisor (Industrial)	L4
7	Research Assistant (Industrial)	L4
8	Bioinformatician (Industrial)	L5

9	Compliance Executive (Industrial)	L5
10	Customer Service Executive (Industrial)	L5
11	HS Executive (Industrial)	L5
12	Logistic Executive (Industrial)	L5
13	Marketing Executive (Industrial)	L5
14	Production Executive (Industrial)	L5
15	Quality Assurance Executive (Industrial)	L5
16	Quality Control Executive (Industrial)	L5
17	Research and Development Executive (Industrial)	L5
18	Regulatory Affairs Executive (Industrial)	L5
19	Sales Executive (Industrial)	L5
20	Technical Service Executive (Industrial)	L5
21	Warehouse Executive (Industrial)	L5
22	Research Officer (Industrial)	L5
23	Customer Service Manager (Industrial)	L6
24	Quality Assurance Manager (Industrial)	L6

6.4.3.2 Non Critical Job Titles

1	General Worker (Industrial)	L1
2	Store Handler (Industrial)	L1
3	Assistant Engineering Technician (Industrial)	L2
4	Forklift Driver (Industrial)	L2
5	Packaging Leader (Industrial)	L2
6	Production Technician (Industrial)	L2
7	Quality Control Inspector (Industrial)	L2
8	Waste Treatment Assistant (Industrial)	L2
9	Assistant Technologist (Industrial)	L3
10	Customer Service Assistant (Industrial)	L3
11	Engineering Technician (Industrial)	L3
12	HS Technician (Industrial)	L3
13	Lab Technician (Industrial)	L3
14	Process Leader (Industrial)	L3

15	Production Assistant (Industrial)	L3
16	Quality Control Technician (Industrial)	L3
17	Shift Leader (Industrial)	L3
18	Storekeeper (Industrial)	L3
19	Document Controller (Industrial)	L4
20	Environmental Executive (Industrial)	L4
21	HS Officer (Industrial)	L4
22	Instrumentation Technologist (Industrial)	L4
23	Logistic Assistant (Industrial)	L4
24	Maintenance Technologist (Industrial)	L4
25	Marketing Assistant (Industrial)	L4
26	Mechanical Technologist (Industrial)	L4
27	Production Supervisor (Industrial)	L4
28	Quality Assurance Assistant (Industrial)	L4
29	Quality Control Assistant (Industrial)	L4
30	Research and Development Supervisor (Industrial)	L4
31	Sales Assistant (Industrial)	L4
32	Technical Service Assistant (Industrial)	L4
33	Warehouse Supervisor (Industrial)	L4
34	Bioinformatics Manager (Industrial)	L5
35	Process Technologist (Industrial)	L5
36	Project Technologist (Industrial)	L5
37	Bioinformatics Director (Industrial)	L6
38	Electrical and Instrumentation Manager (Industrial)	L6
39	Engineering and Maintenance Director (Industrial)	L6
40	Environmental Manager (Industrial)	L6
41	Logistic Manager (Industrial)	L6
42	Maintenance Manager (Industrial)	L6
43	Marketing Manager (Industrial)	L6
44	Occupational Health and Safety Manager (Industrial)	L6
45	Production Manager (Industrial)	L6
46	Project Engineering Manager (Industrial)	L6

47	Quality Control Manager (Industrial)	L6
48	Quality Management Manager (Industrial)	L6
49	Research and Development Manager (Industrial)	L6
50	Regulatory Affairs Manager (Industrial)	L6
51	Sales Manager (Industrial)	L6
52	Scientist (Industrial)	L6
53	Technical Service Manager (Industrial)	L6
54	Warehouse Manager (Industrial)	L6
55	HSE Director (Industrial)	L7
56	Production Director (Industrial)	L7
57	Quality Assurance/Quality Control/Quality Management Director (Industrial)	L7
58	Research and Development Principal (Industrial)	L7
59	Regulatory Director (Industrial)	L7
60	Sales and Marketing Director (Industrial)	L7
61	Supply Chain Director (Industrial)	L7

7. GENERAL PRE-REQUISITES

Expert panel members concluded that there are general pre-requisites for all Job Titles identified in the Biotechnology based industry according to level. The summary for the pre-requisites are:

7.1 Language Skill

- i. **Level 1 – Level 2** must have basic command in Malay and English Language; and
- ii. **Level 3 – Level 8** must be proficient in Malay and English language.

7.2 Information Technology (IT) Skill

- i. **Level 1 – Level 2** must have basic knowledge in computer system and office software; and
- ii. **Level 3 – Level 8** must be proficient in computer system and office software.

7.3 Interpersonal, Communication and Management Skill

- i. **Level 1 – Level 3** not necessary; and
- ii. **Level 4 – Level 8** must have interpersonal skill because their jobs are related to manage and supervise their subordinates.

8. CONCLUSION AND RECOMMENDATION

As a result of the Biotechnology Based Industry Occupational Analysis conducted together with expert panel members from various Biotechnology sub sectors and organisations, a total of 111 job titles and 10 main sub sectors have been identified.

Referring to Malaysia's economical plans and vision for the coming years, such as the IMP 3 and RMK 9, a framework of the Biotechnology Based Industry workforce has been identified. It is hoped that the result of this Occupational Analysis will be able to fulfil the future plans by training Malaysians to be skilled workers in the Biotechnology Based Industry towards improving the quality of life of Malaysians and at boosting Malaysia's global competitiveness.

Malaysia has made significant strides to take advantage of advancements and incentives in the Biotechnology Based Industry to improve efficiency and productivity, thus contributing to the increased overall competitiveness of the economy. Additional measures must also be undertaken to enhance human resource development to provide adequate skilled and knowledgeable manpower to support the knowledge-based economy.

The Biotechnology Based Industry has great potential. Endowed with strong government support and a substantial human resource, this industry could expand by the tight corporation among the government, Biotechnology Based Industry organisations and education centres.

REFERENCES

- 1 3rd Outline Perspective Plan
<http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN003661.pdf> 08/05/2010 11.45a.m
- 2 3rd National Agricultural Policy
- 3 Sabah Fish Department
http://www.fishdept.sabah.gov.my/download/nap_summary.pdf 08/05/2010 11.50 a.m
- 4 9th Malaysia Plan, Chapter 6, page 165-179
- 5 Contract Pharma Website
<http://www.contractpharma.com/search.php> 24/05/2010 12.16pm
- 6 <http://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/InVitroDiagnostics/default.htm> 24/05/2010 13.53pm
- 7 The Association of Malaysia Medical Industries (AMMI) Website
[http://www.ammi.com.my/pdf_2009/Seminar%20on%20Medical%20Devices.%2029%20Oct%202009%20\(Mod\).pdf](http://www.ammi.com.my/pdf_2009/Seminar%20on%20Medical%20Devices.%2029%20Oct%202009%20(Mod).pdf) 24/05/2010 14.47p.m
- 8 <http://en.wikipedia.org/wiki/Biofuel> 24/05/2010 19.47p.m
- 9 http://www.esru.strath.ac.uk/EandE/Web_sites/02-03/biofuels/what_biodiesel.htm 24/05/2010 21.30p.m
- 10 <http://en.wikipedia.org/wiki/Polyhydroxyalkanoates> 24/05/2010 19.30p.m
- 11 Bastioli, Catia, Handbook of Biodegradable Polymers, Smithers Rapra Technology, 2005.
- 12 Industrial Master Plan, Chapter 24, page 675.
- 13 Frost & Sullivan, Malaysian Biotechnology: Human Capital Development Report 2009, Biotechcorp.
- 14 Frost & Sullivan, Overview: Malaysian Agricultural Biotechnology, Biotechcorp 2009.
- 15 Frost & Sullivan, Overview: Malaysian Healthcare Biotechnology, Biotechcorp 2009.
- 16 Frost & Sullivan, Overview: Malaysian Industrial Biotechnology, Biotechcorp 2009.
- 17 <http://www.britannica.com/EBchecked/topic/66219/biotechnology>
- 18 <http://www.merriam-webster.com/dictionary/biotechnology>

ANNEX 1: PLAN OF ACTION

TABLE: OCCUPATIONAL STRUCTURED YEARS 2010 DEVELOPMENT
FIELD: BIOTECHNOLOGY

No.	Activities	Duration	5 Month																Notes				
			May-10				Jun-10				Jul-10				Aug-10					Sep-10			
			M1	M2	M3	M4	M1	M2	M3	M4	M1	M2	M3	M4	M1	M2	M3	M4					
1	Appoint success company	1 day																					
2	JPK briefing	1 day																					
3	Development activities	2 days																		1st Workshop(15-16 May 2010)			
4	Submission analysis (1)																						
5	Presentation (1)	1 day																					
6	Development activities	2 days																		2nd Workshop (19-20 June 2010)			
7	Submission analysis (2)																						
8	Presentation (2)	1 day																					
9	Development activities	2 days																		3rd Workshop (17-18 July 2010)			
10	Submit final analysis																						
11	Final presentation	1 day																					
12	Submit full document/final receiving																						

ANNEX 2:

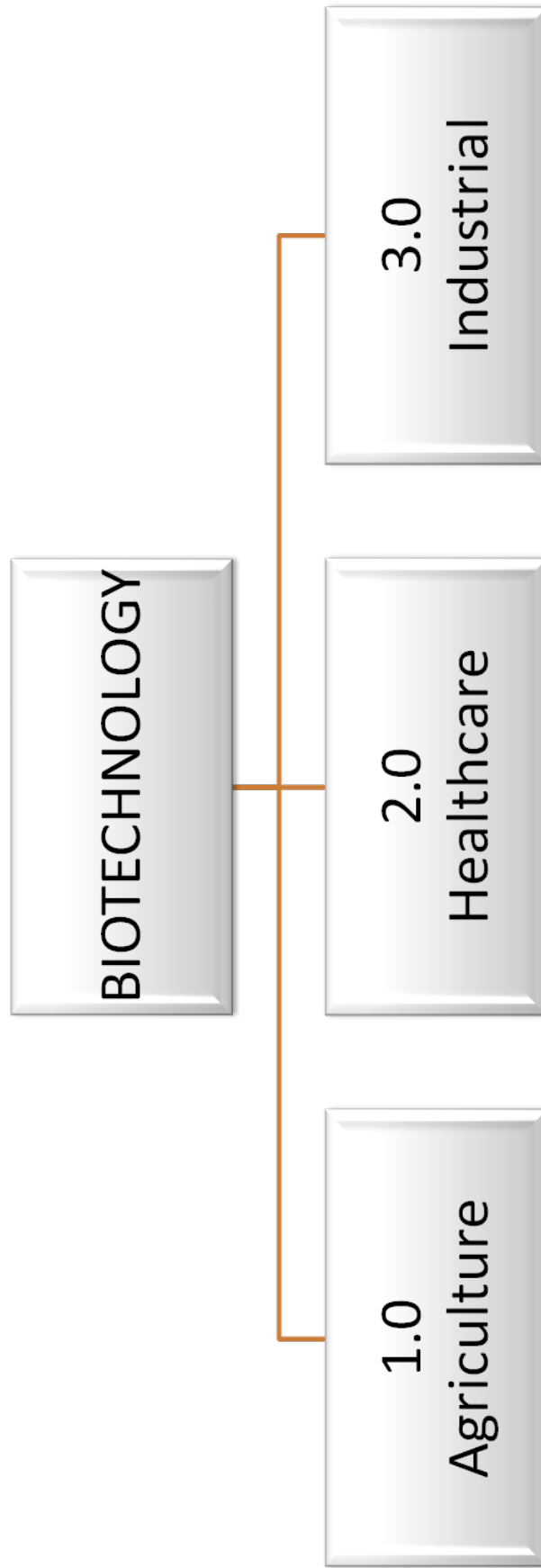
**LIST OF EXPERT
PANEL**

LIST OF EXPERT PANEL FOR OCCUPATIONAL ANALYSIS (BIOTECHNOLOGY)

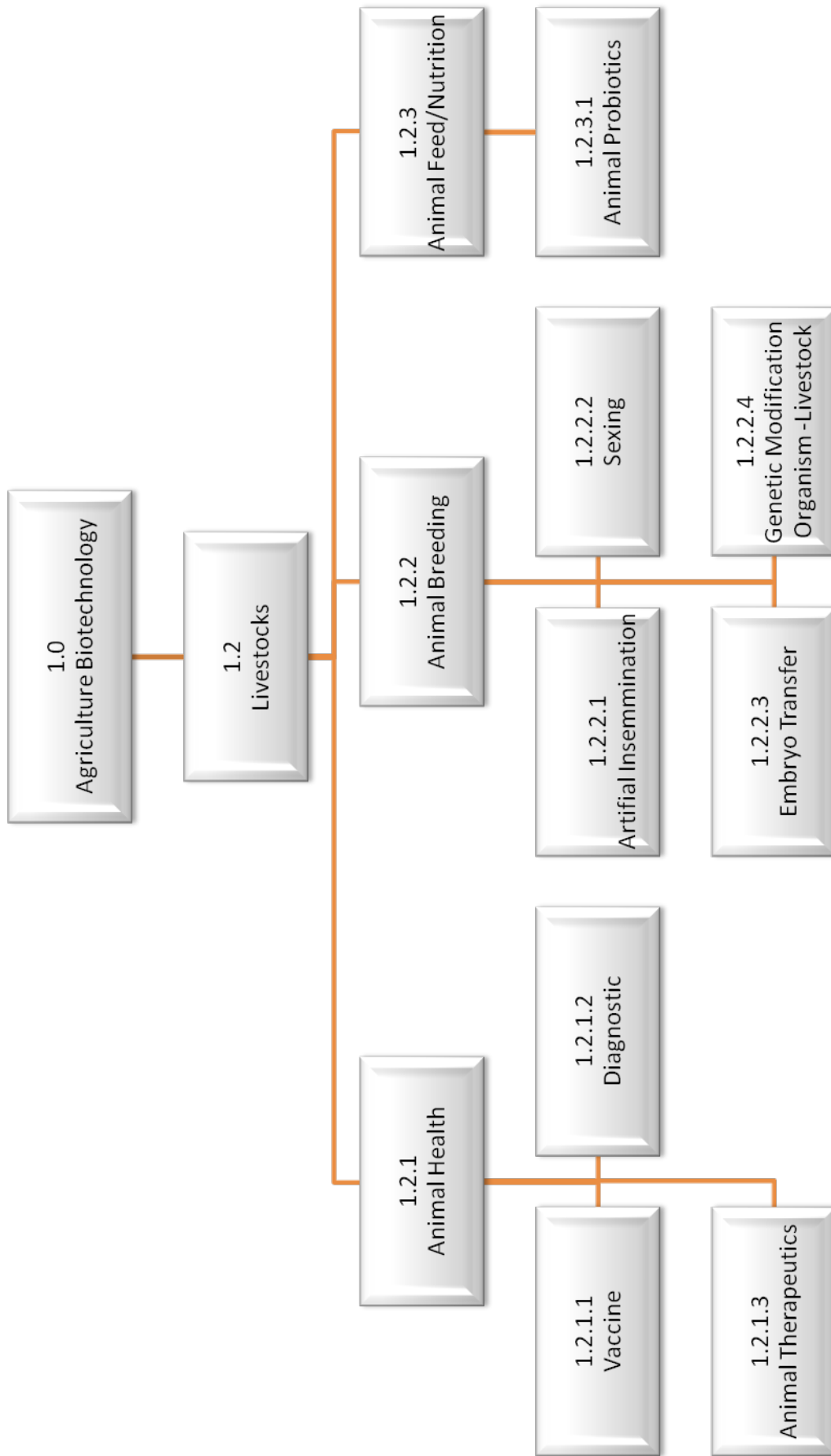
EXPERT PANEL			SPECIALIZATION AREA
1	Dr Harcharan Singh	Vice President, Industrial Biotechnology Biotechcorp	Industrial Biotechnology
2	Said Al Jafri Osman	Manager, Human Capital Development Biotechcorp	Agriculture Biotechnology
3	Wan Jeffery Majid	Vice President, Healthcare Biotechcorp	Healthcare Biotechnology
4	Azli Bin Haji Norali	Human Resource Manager PureCircle Sdn Bhd	Industrial Biotechnology
5	Dr. Azhar Mohamad	Research Officer, Malaysian Nuclear Agency	Agriculture Biotechnology
6	Mohd. Fairuz Yasmin Bin Abdul Khalid	Research & Development Manager, Nova Laboratories Sdn Bhd	Industrial Biotechnology
7	Puan Zaliha Othman	Ketua Penolong Pengarah, Jabatan Pertanian Negeri Selangor	Agriculture Biotechnology
8	Nablan bin Yusoff	Managing Director, Theeqah Sdn. Bhd	Healthcare Biotechnolgy
9	Mohd Asri Bin Ibrahim	Managing Director, 3R Evolusi Sdn.Bhd	Healthcare Biotechnolgy
10	Hamdan Bin Salihan	Director, Alaf Nova Sdn. Bhd	Agriculture Biotechnology
11	Mohd Noor Bin Ubaidullah	Manager, RESB (Recycle Energy Sdn. Bhd)	Industrial Biotechnology
Facilitator			
1	Mohd Khairullah bin Ab. Manaf	Facilitator , I-IRA Sdn. Bhd	
2	Rosnani binti Arbai	Co-facilitator, I-IRA Sdn. Bhd	
Proof Reader			
1	Zulkarnain bin Mohammad	Lecturer, Universiti Kebangsaan Malaysia (UKM)	

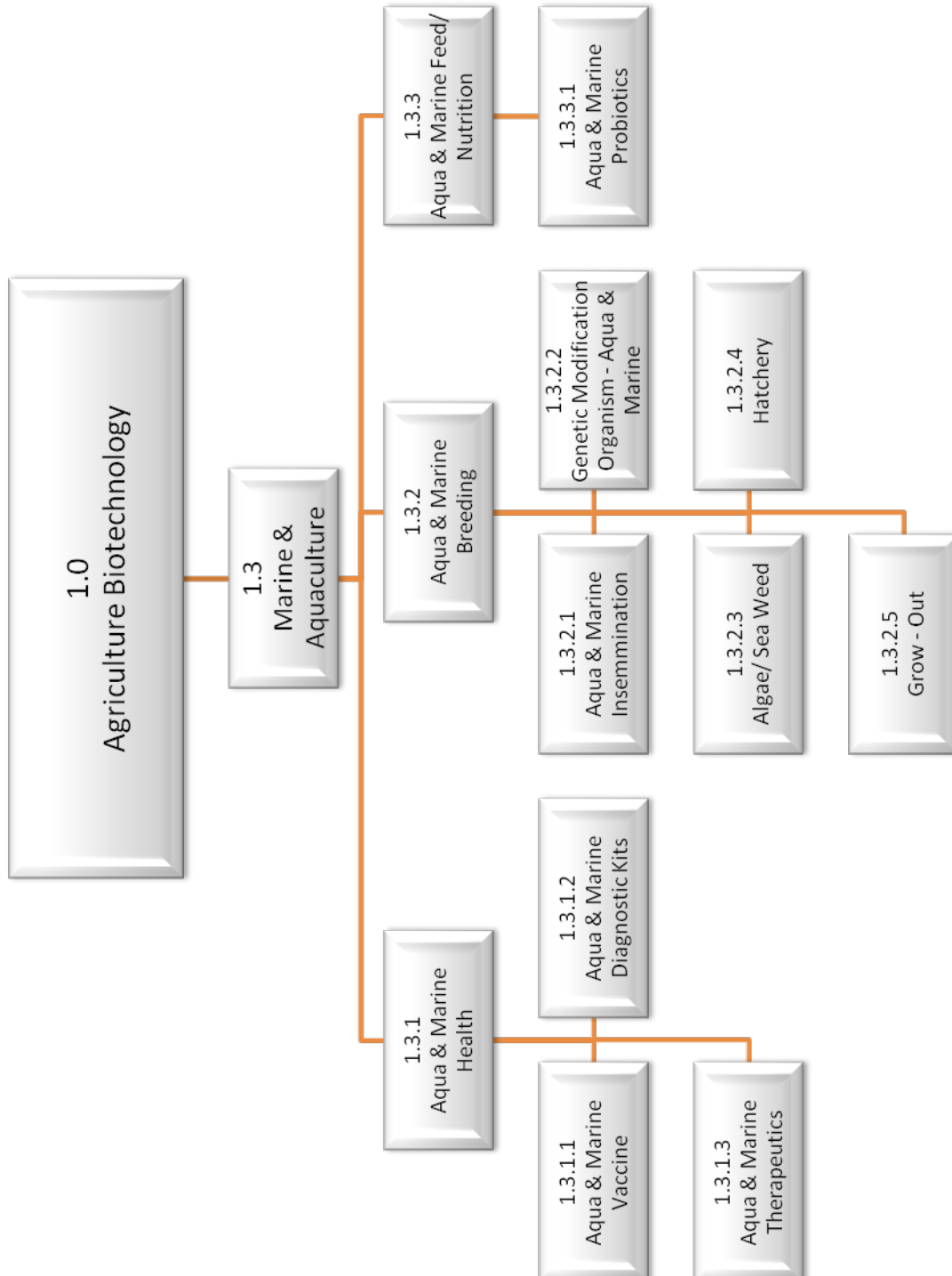
ANNEX 3:

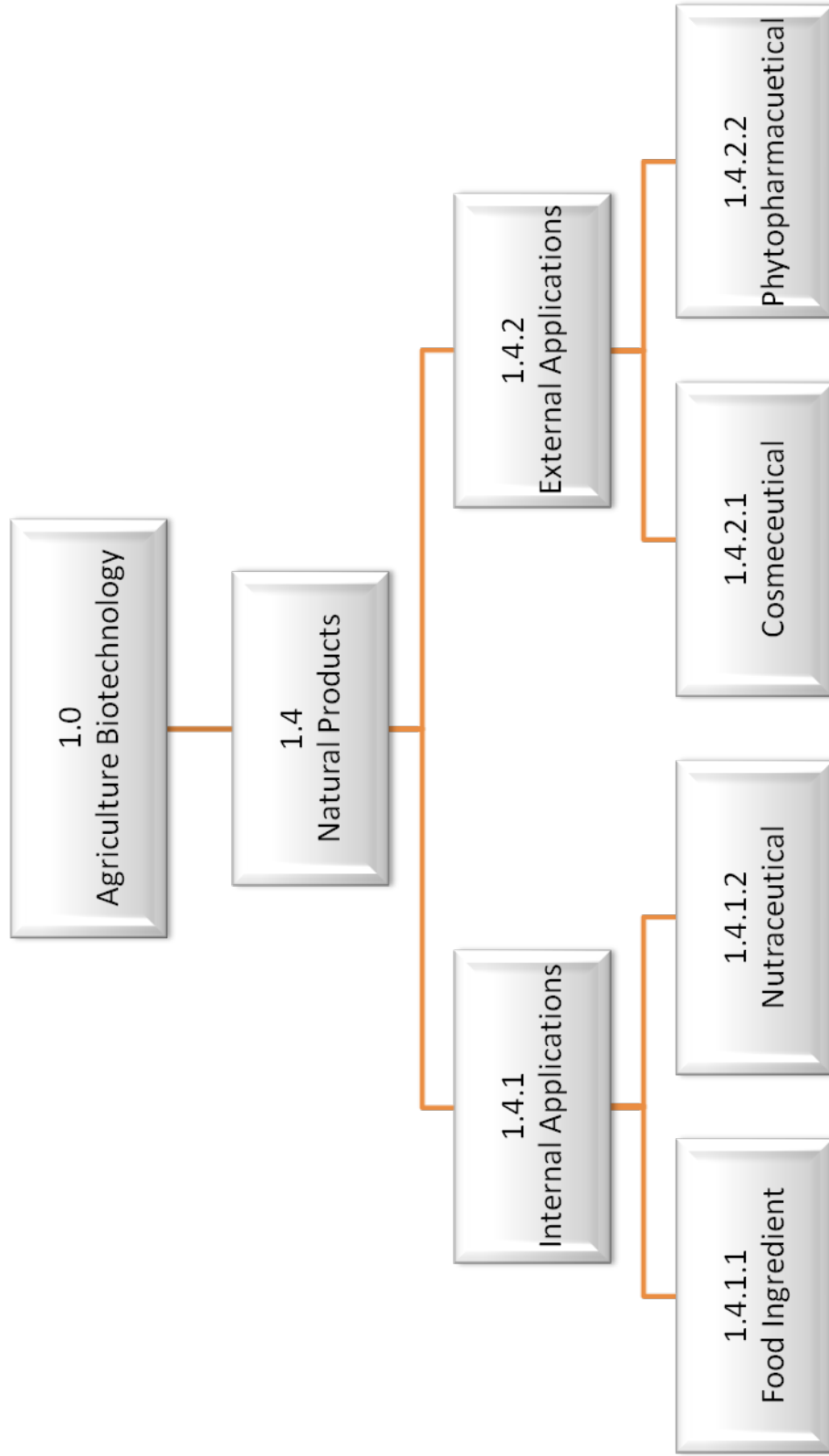
**INDUSTRY STRUCTURE
FOR
BIOTECHNOLOGY
BASED INDUSTRY**

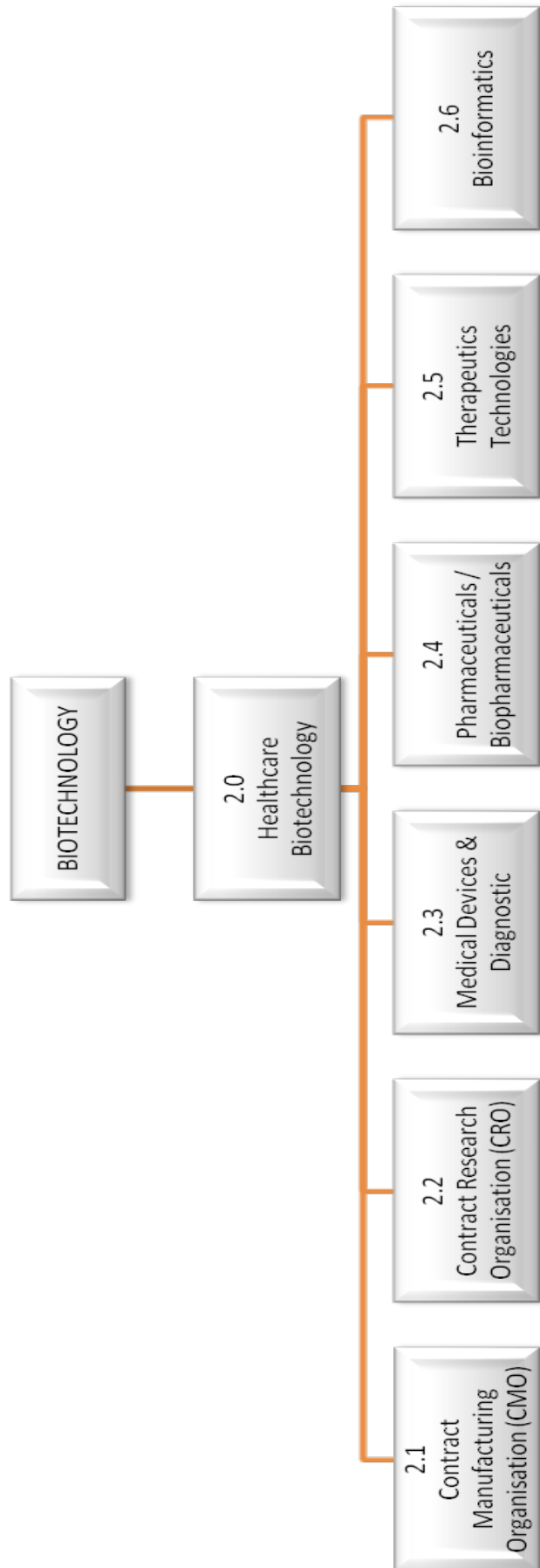


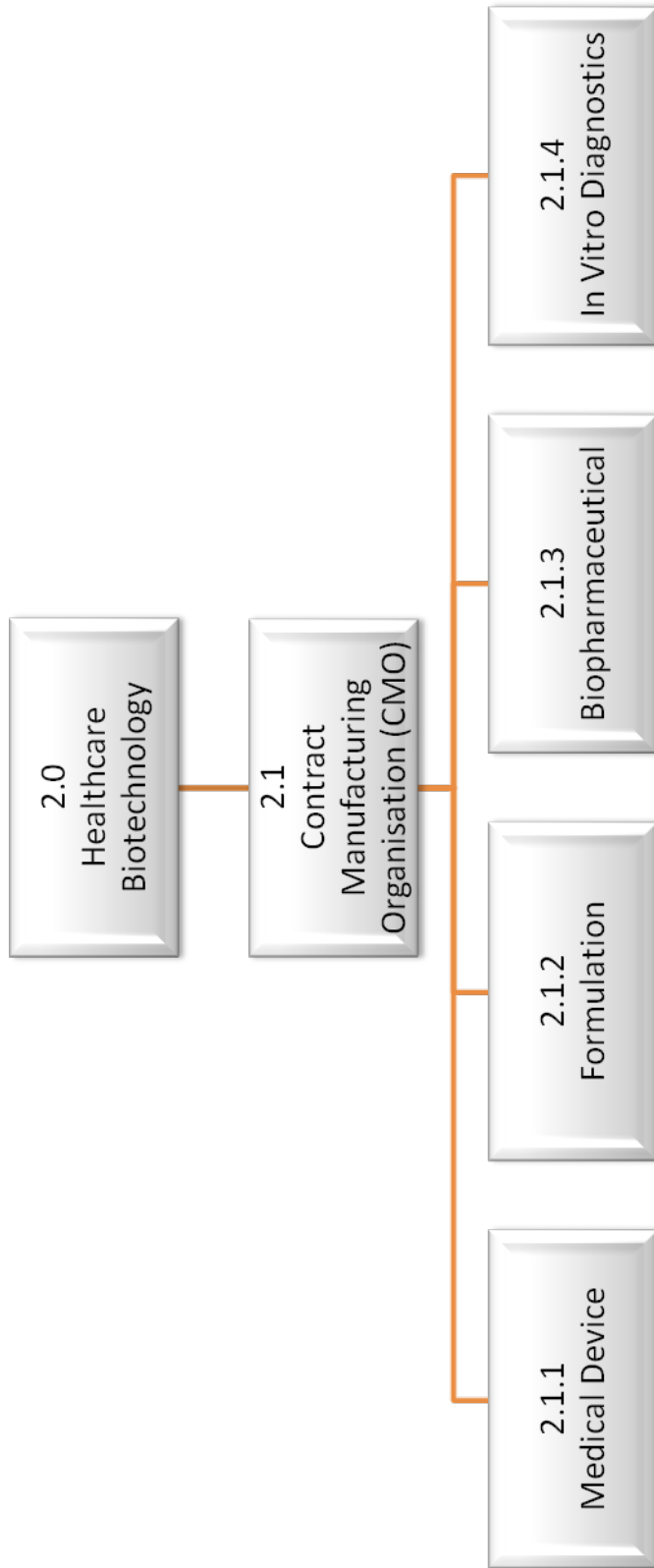


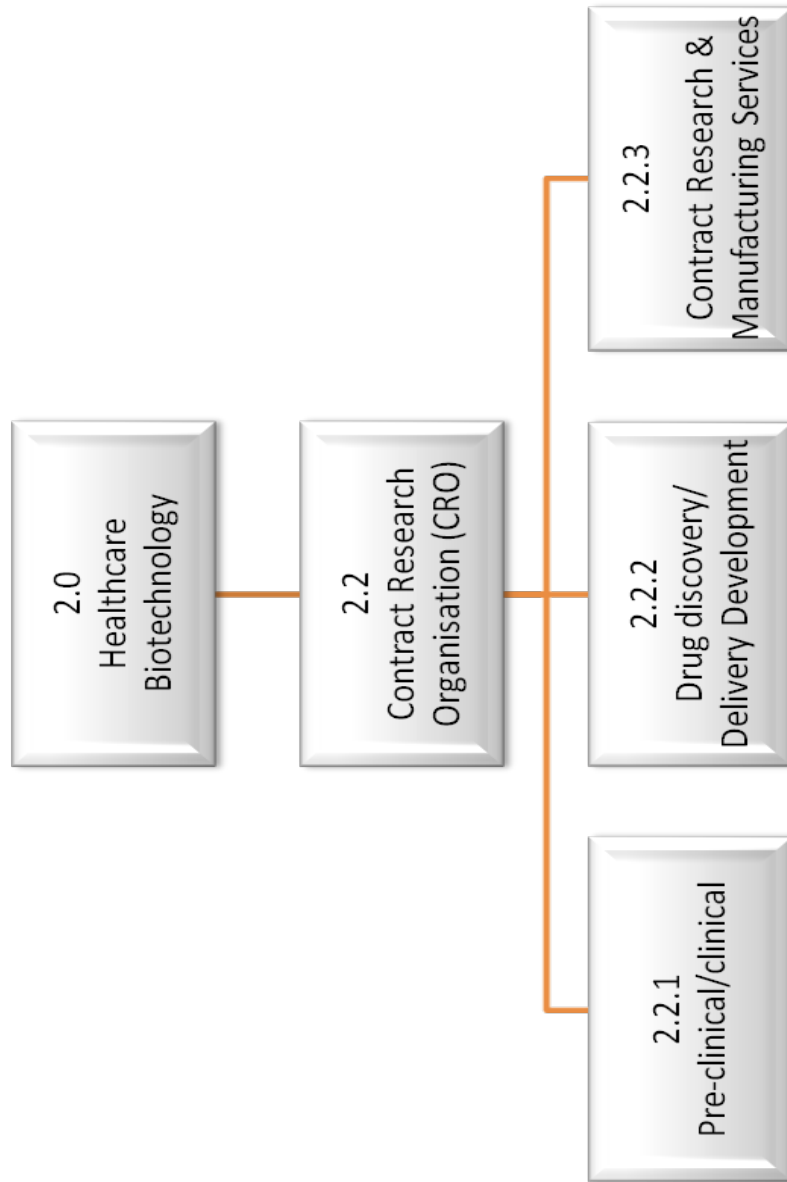


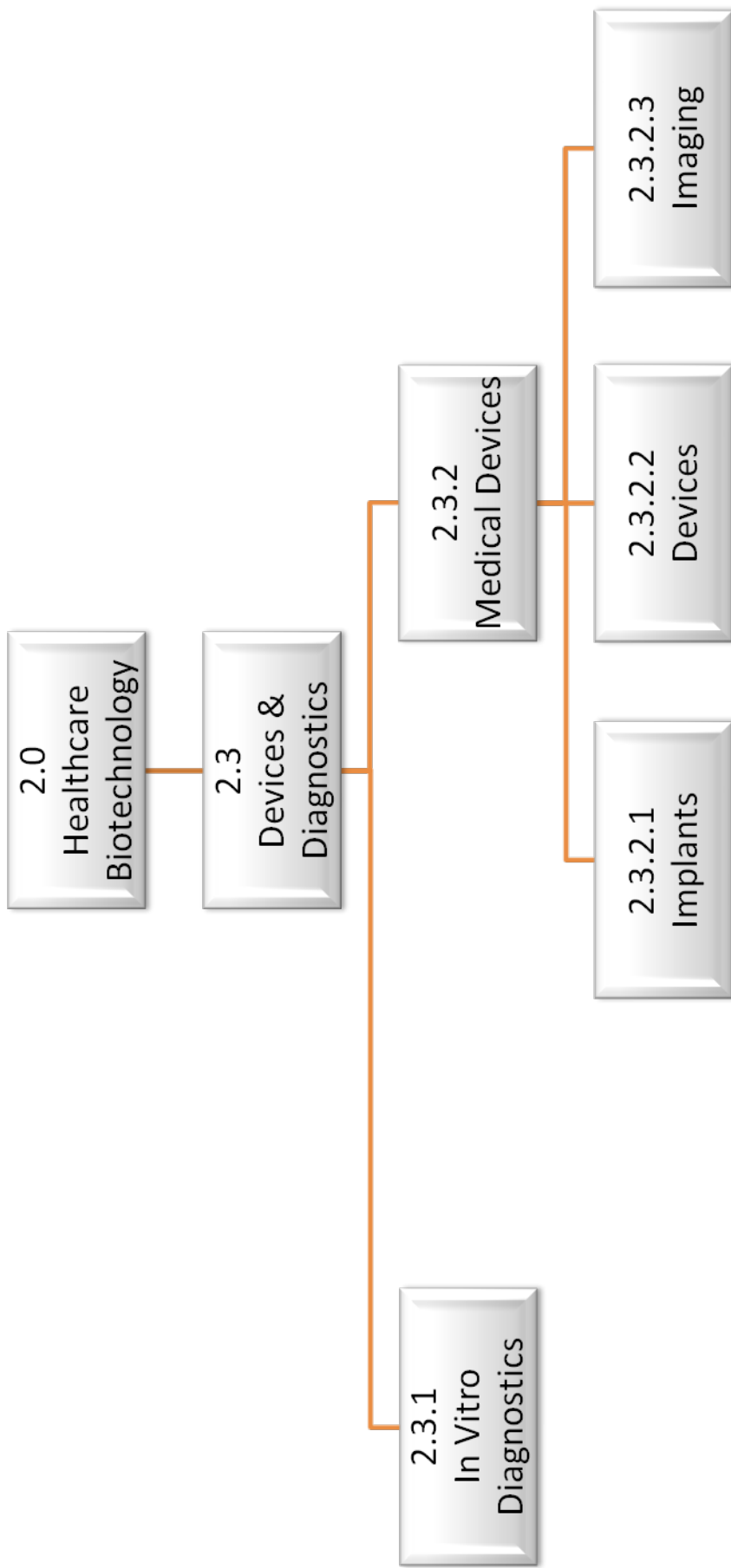


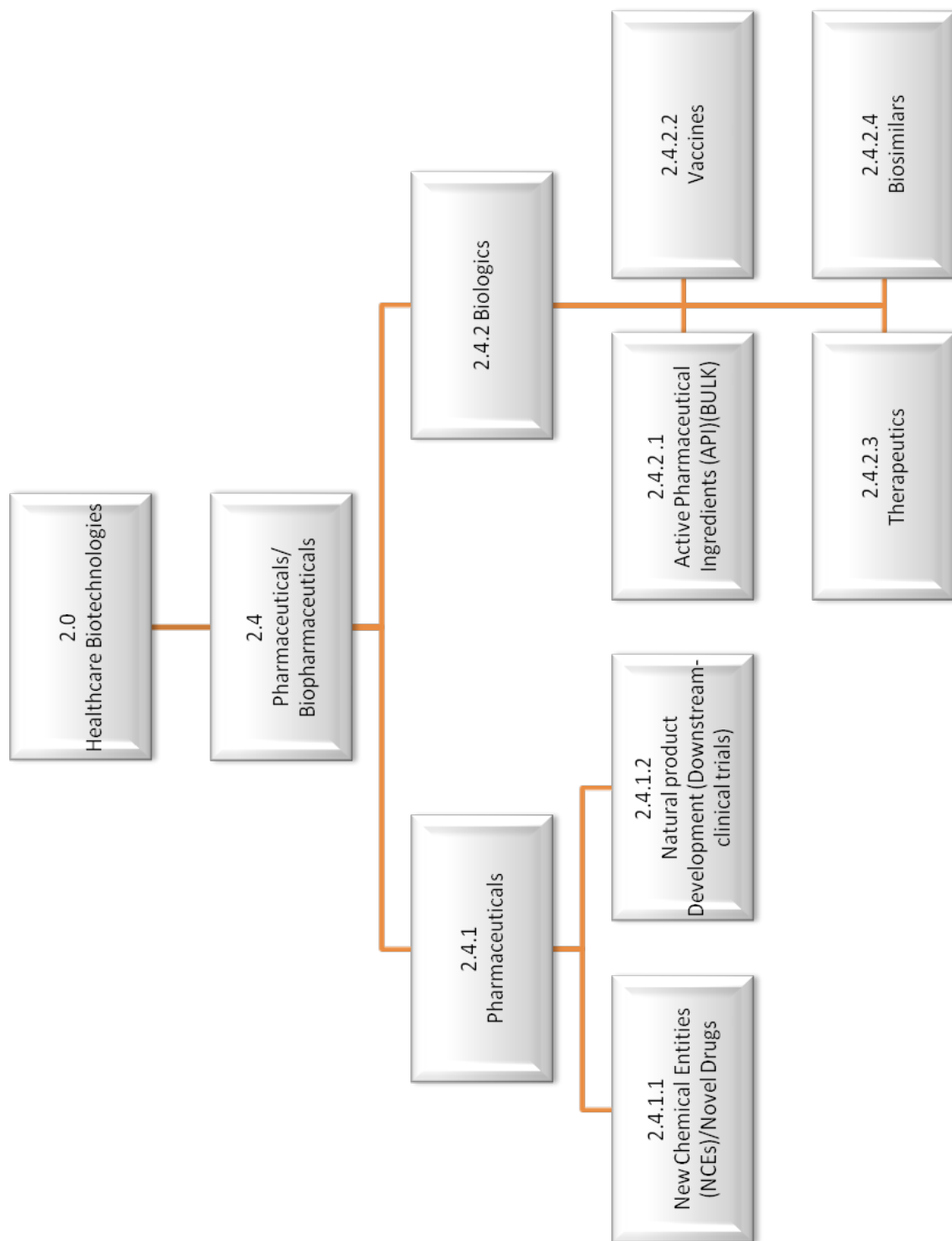


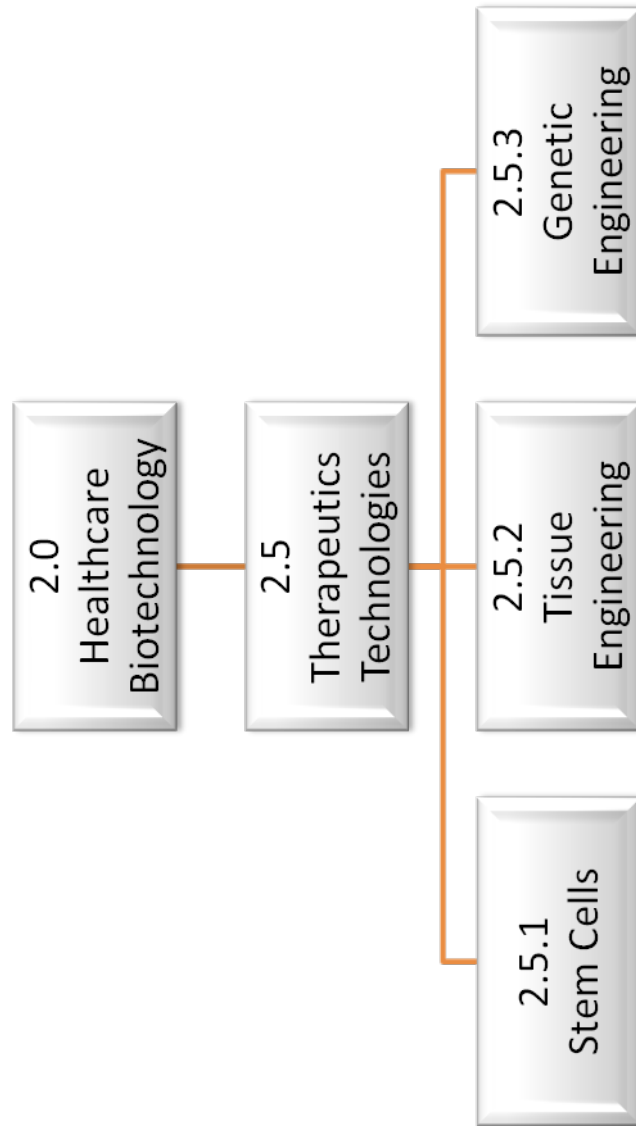


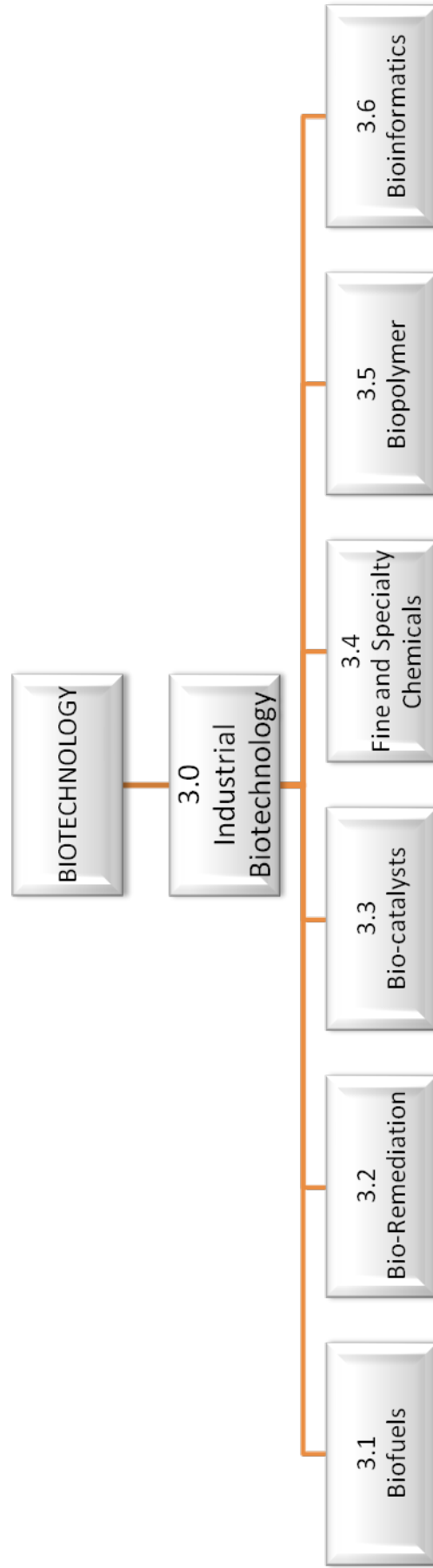


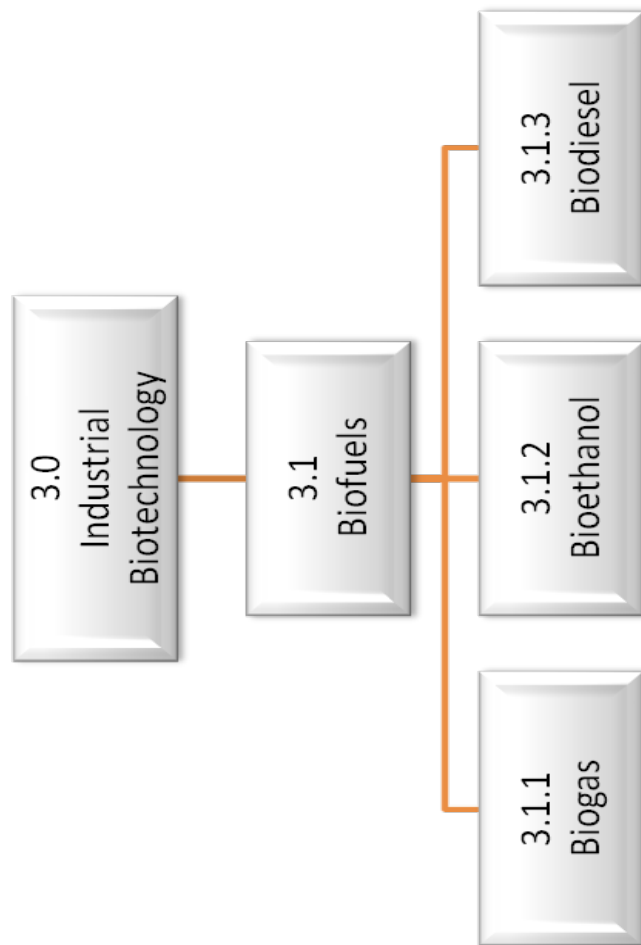


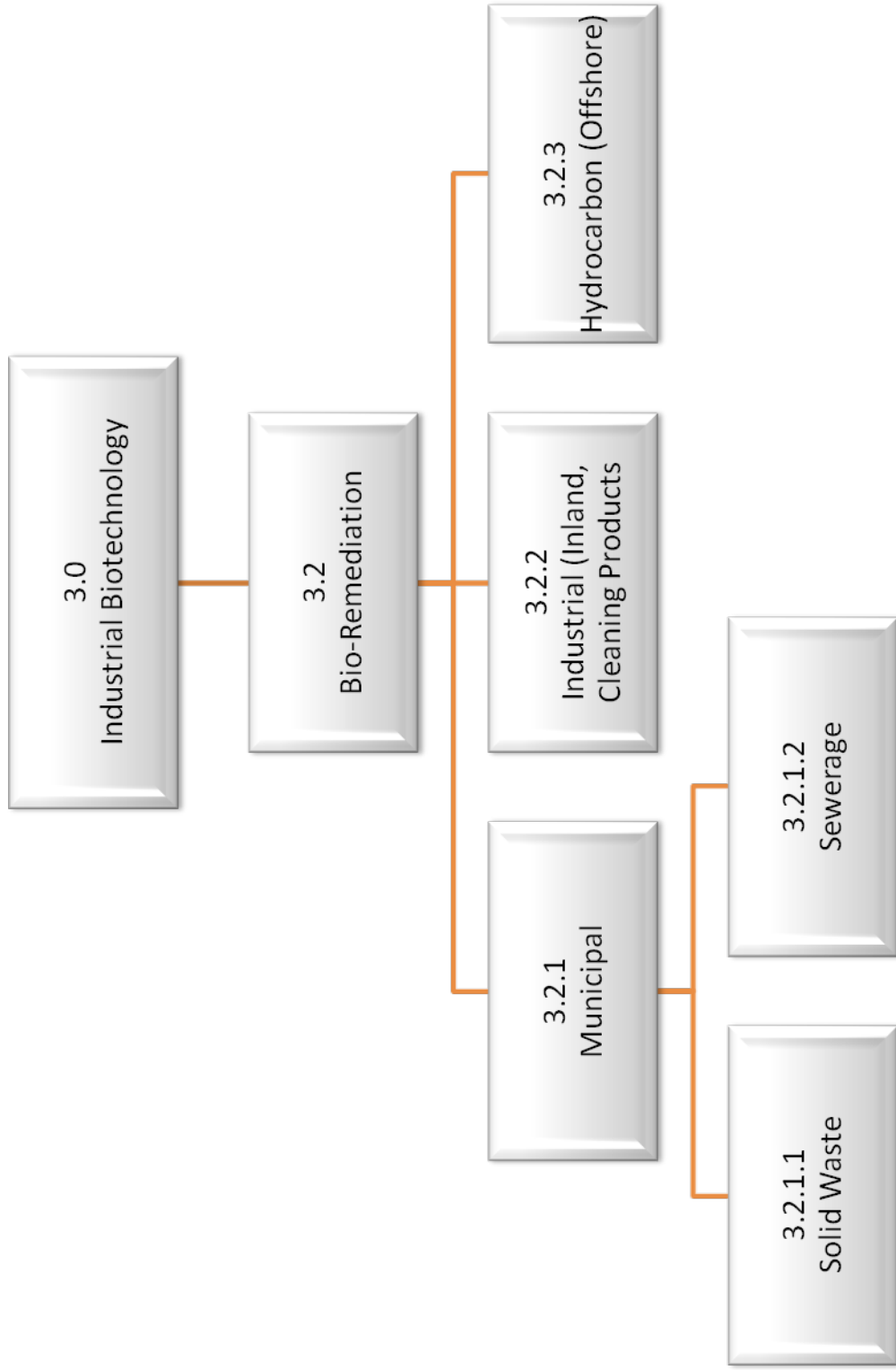


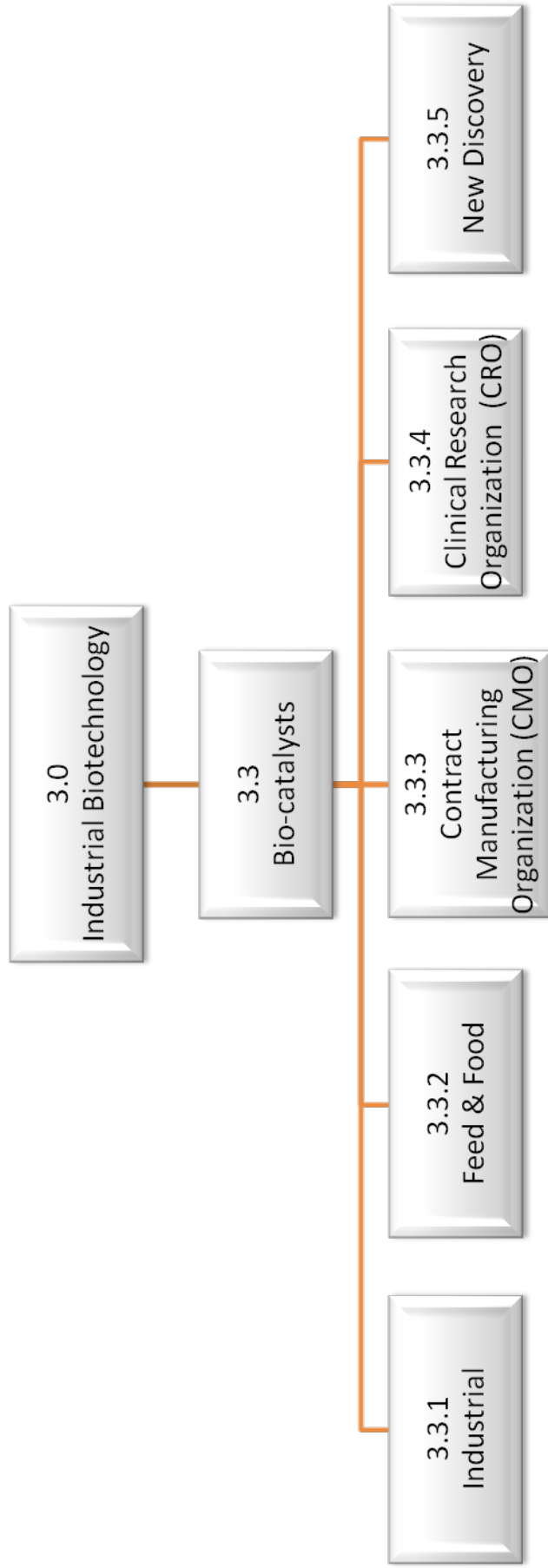


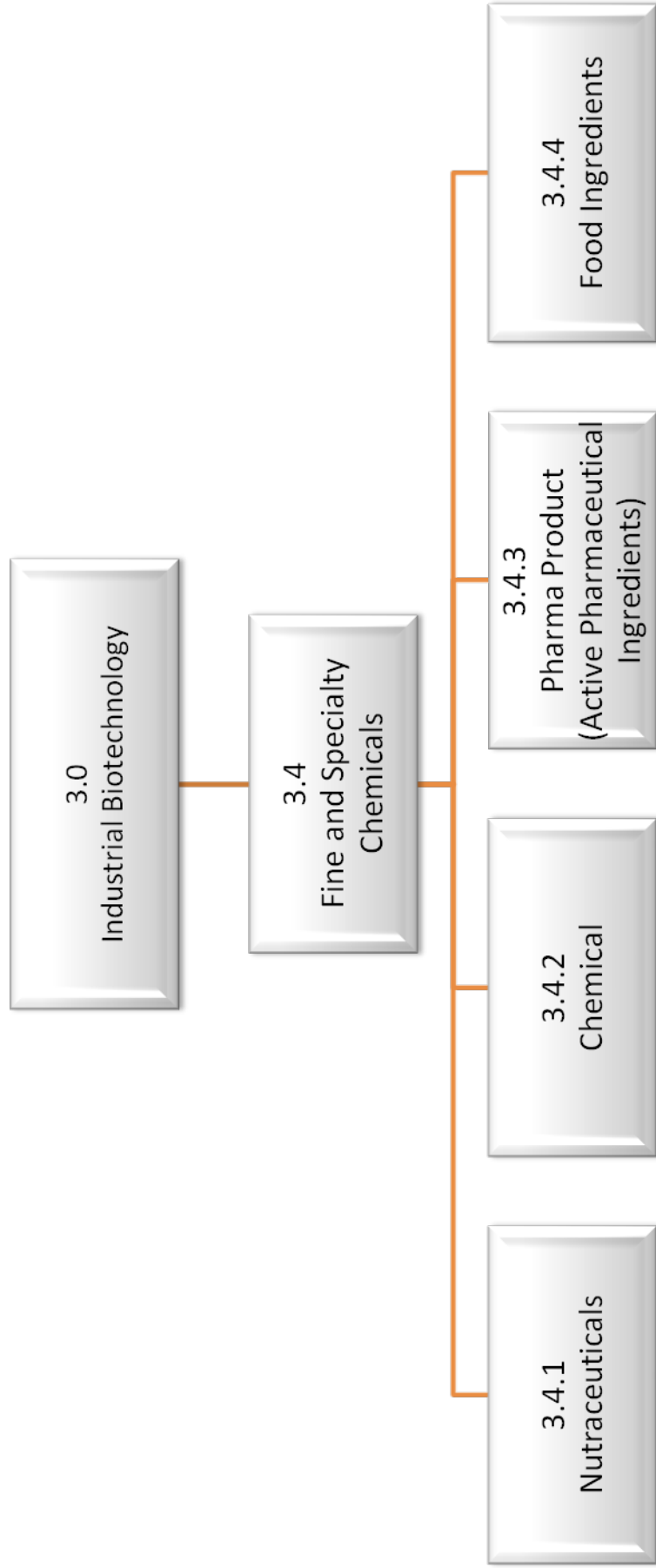


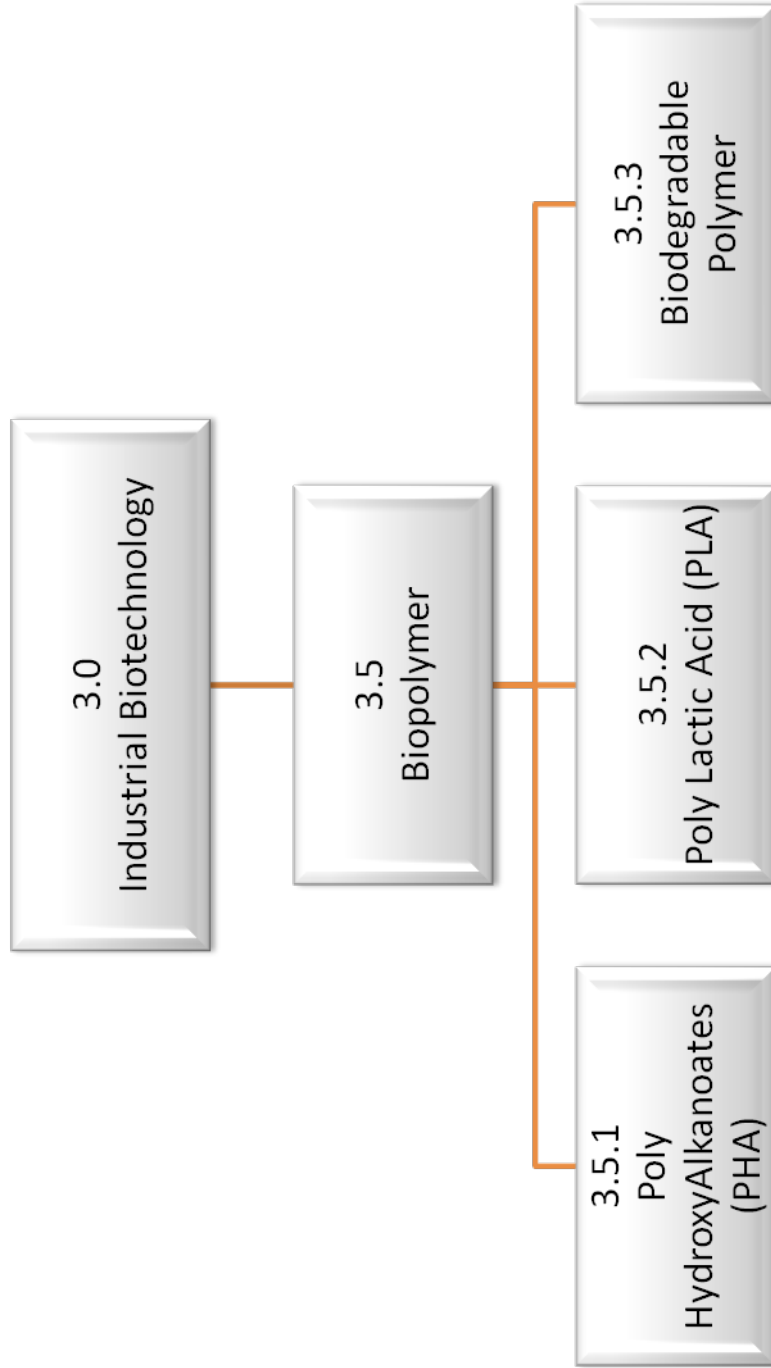












ANNEX 4:

JOB TITLES HIERARCHY FOR BIOTECHNOLOGY BASED INDUSTRY

SECTOR	AGRICULTURE BIOTECHNOLOGY									
SUB-SECTOR JOB AREA	CROPS/LIVESTOCKS/AQUA&MARINE/NATURAL PRODUCT									
	R&D DIVISION									
SUB JOB AREA	Product Enhancement	Product Development	Seed / Mutation Breeding	Tissue Culture	GMO - Crops	Clinical/ Pre-clinical	Artificial Insemination (Livestocks/Aqua&Marine)	GMO (Livestocks/Aqua&Marine)		
LEVEL 8	NA									
LEVEL 7	R&D Principal (Agriculture)	Plant Breeder * (Agriculture)			Clinical Research Director (Agriculture)	Veterinary Research Principal (Agriculture)	Aqua & Marine Research Principal (Agriculture)	Animal Geneticist Principal (Agriculture)	Aqua & Marine Geneticist Principal * (Agriculture)	
LEVEL 6	R&D Manager (Agriculture)	Scientist (Agriculture)	Nursery Manager (Agriculture)	Culture Lab Manager (Agriculture)	GMO Lab Manager (Agriculture)	Clinical Research Manager (Agriculture)	Veterinary Researcher * (Agriculture)	Aqua & Marine Researcher * (Agriculture)	Animal Genetic Researcher * (Agriculture)	Aqua & Marine Genetic Researcher (Agriculture)
LEVEL 5	R&D Executive *(Agriculture)	Research Officer * (Agriculture)	Agronomist * (Agriculture)	Plant Technologist* (Agriculture)	GMO Plant Technologist * (Agriculture)	Clinical Research Associate * (Agriculture)	Veterinary Technologist * (Agriculture)	Aqua & Marine Technologist * (Agriculture)	Animal Genetic Technologist * (Agriculture)	Aqua & Marine Genetic Technologist* (Agriculture)
LEVEL 4	R&D Supervisor (Agriculture)	Research Assistant * (Agriculture)	Assistant Agronomist * (Agriculture)	Tissue Culturist * (Agriculture)	Clinical Research Officer * (Agriculture)		Veterinary Assistant Technologist (Agriculture)	Aqua & Marine Assistant Technologist (Agriculture)	Animal Genetic Assistant Technologist * (Agriculture)	Aqua & Marine Genetic Assistant Technologist * (Agriculture)
LEVEL 3	R&D Technician *(Agriculture)	Lab Technician (Agriculture)	Agriculture Technician (Agriculture)	Lab Assistant (Agriculture)	NA		Veterinary Technician * (Agriculture)	Aqua & Marine Technician * (Agriculture)	Animal Genetic Technician (Agriculture)	Aqua & Marine Genetic Technician * (Agriculture)
LEVEL 2	NA			Agriculture Assistant Technician (Agriculture)	NA					
LEVEL 1	NA									

*Critical Job Title

SECTOR	AGRICULTURE BIOTECHNOLOGY						
SUB-SECTOR	CROPS/LIVESTOCKS/AQUA&MARINE/NATURAL PRODUCT						
JOB AREA	PRODUCTION				REPRODUCTION		
SUB JOB AREA	Administration	Processing	Packaging	Seed/Mutation Breeding	Tissue Culture	LIVESTOCKS/AQUA&MARINE	
LEVEL 8	NA						
LEVEL 7	Production Director (Agriculture)		NA	Plant Breeder * (Agriculture)		NA	
LEVEL 6	Production Manager (Agriculture)		NA	Nursery Manager (Agriculture)		Livestocks Reproduction Manager (Agriculture)	Aqua & Marine Reproduction Manager (Agriculture)
LEVEL 5	Production Executive *(Agriculture)	Process Technologist (Agriculture)	Shift Leader (Agriculture)	Agronomist* (Agriculture)	Plant Technologist* (Agriculture)	Veterinary Reproduction Technologist * (Agriculture)	Aqua & Marine Reproduction Technologist * (Agriculture)
LEVEL 4	Production Supervisor (Agriculture)			Assistant Agronomist* (Agriculture)	Plant Propagator Supervisor * (Agriculture)	Veterinary Reproduction Assistant Technologist (Agriculture)	Aqua & Marine Reproduction Assistant Technologist * (Agriculture)
LEVEL 3	Production Assistant (Agriculture)	Process Leader (Agriculture)	Shift Leader (Agriculture)	Seedling Technician * (Agriculture)	Plant Tissue Culture Technician * (Agriculture)	Veterinary Reproduction Technician * (Agriculture)	Aqua & Marine Reproduction Technician * (Agriculture)
LEVEL 2	NA	Production Technician (Agriculture)	Packaging Leader (Agriculture)	Seedling Assistant Technician * (Agriculture)	Plant Tissue Culture Assistant Technician * (Agriculture)	Livestocks Handler (Agriculture)	Aqua & Marine Handler (Agriculture)
LEVEL 1	General Worker						

*Critical Job Title

SECTOR	AGRICULTURE BIOTECHNOLOGY				
SUB-SECTOR	CROPS/LIVESTOCKS/AQUA&MARINE/NATURAL PRODUCT				
JOB AREA	SALES & MARKETING				
SUB JOB AREA	Customer Service	Technical Services	Marketing	Sales	
LEVEL 8	NA				
LEVEL 7	Sales & Marketing Director (Agriculture)				
LEVEL 6	Customer Service Manager * (Agriculture)	Technical Service Manager (Agriculture)	Marketing Manager (Agriculture)	Sales Manager (Agriculture)	
LEVEL 5	Customer Service Executive * (Agriculture)	Technical Service Executive * (Agriculture)	Marketing Executive * (Agriculture)	Sales Executive * (Agriculture)	
LEVEL 4	Customer Service Assistant (Agriculture)	Technical Service Assistant (Agriculture)	Marketing Assistant (Agriculture)	Sales Assistant (Agriculture)	
LEVEL 3	NA				
LEVEL 2	NA				
LEVEL 1	NA				

*Critical Job Title

SECTOR	AGRICULTURE BIOTEHNOLOGY		
SUB-SECTOR	CROPS/LIVESTOCKS/AQUA&MARINE/NATURAL PRODUCT		
JOB AREA	LOGISTICS & WAREHOUSING		
SUB JOB AREA	Logistic	Warehouse	
LEVEL 8	NA		
LEVEL 7	Supply Chain Director (Agriculture)		
LEVEL 6	Logistic Manager (Agriculture)	Warehouse Manager (Agriculture)	
LEVEL 5	Logistic Executive * (Agriculture)	Warehouse Executive * (Agriculture)	
LEVEL 4	Logistic Assistant (Agriculture)	Warehouse Supervisor (Agriculture)	
LEVEL 3	Storekeeper (Agriculture)		
LEVEL 2	Forklift Driver (Agriculture)		
LEVEL 1	Store Handler (Agriculture)		

**Critical Job Title*

SECTOR	AGRICULTURE BIOTECHNOLOGY		
SUB-SECTOR	CROPS/LIVESTOCKS/AQUA&MARINE/NATURAL PRODUCT		
JOB AREA	QUALITY ASSURANCE/QUALITY CONTROL/QUALITY MANAGEMENT		
SUB JOB AREA	Quality Assurance	Quality Control	Quality Management
LEVEL 8	NA		
LEVEL 7	Quality Assurance / Quality Control / Quality Management Director (Agriculture)		
LEVEL 6	Quality Assurance Manager * (Agriculture)	Quality Control Manager (Agriculture)	Quality Management Manager (Agriculture)
LEVEL 5	Quality Assurance Executive * (Agriculture)	Quality Control Executive * (Agriculture)	Document Controller (Agriculture)
LEVEL 4	Quality Assurance Assistant (Agriculture)	Quality Control Assistant (Agriculture)	NA
LEVEL 3	NA	Quality Control Technician (Agriculture)	NA
LEVEL 2	NA	Quality Control Inspector (Agriculture)	NA
LEVEL 1	NA		

*Critical Job Title

SECTOR	AGRICULTURE BIOTECHNOLOGY		
SUB-SECTOR	CROPS/LIVESTOCKS/AQUA&MARINE/NATURAL PRODUCT		
JOB AREA	HEALTH, SAFETY & ENVIRONMENT (HSE)		
SUB JOB AREA	Environment	Health & Safety	
LEVEL 8	NA		
LEVEL 7	Health, Safety & Environment Director (Agriculture)		
LEVEL 6	Environmental Manager (Agriculture)	Occupational Health & Safety Manager (Agriculture)	
LEVEL 5	Environmental Executive (Agriculture)	Health & Safety Executive *(Agriculture)	
LEVEL 4	Waste Treatment Supervisor *(Agriculture)	Health & Safety Officer (Agriculture)	
LEVEL 3	Waste Treatment Technician *(Agriculture)	Health & Safety Technician (Agriculture)	
LEVEL 2	Waste Treatment Assistant (Agriculture)	NA	
LEVEL 1	NA		

*Critical Job Title

SECTOR	AGRICULTURE BIOTECHNOLOGY		
SUB-SECTOR	CROPS/LIVESTOCKS/AQUA&MARINE/NATURAL PRODUCT		
JOB AREA	REGULATORY AFFAIRS		
SUB JOB AREA	Compliance	Regulatory	
LEVEL 8		NA	
LEVEL 7		Regulatory Director (Agriculture)	
LEVEL 6		Regulatory Affairs Manager (Agriculture)	
LEVEL 5	Compliance Executive * (Agriculture)		Regulatory Affairs Executive * (Agriculture)
LEVEL 4	Compliance Assistant Executive * (Agriculture)		Regulatory Affairs Assistant Executive * (Agriculture)
LEVEL 3		NA	
LEVEL 2		NA	
LEVEL 1		NA	

*Critical Job Title

SECTOR	AGRICULTURE BIOTECHNOLOGY			
SUB-SECTOR	CROPS/LIVESTOCKS/AQUA&MARINE/NATURAL PRODUCT			
JOB AREA	ENGINEERING			
SUB JOB AREA	Maintenance	Project Engineering		Electrical & Instrumentation
LEVEL 8	NA			
LEVEL 7	Engineering & Maintenance Director (Agriculture)			
LEVEL 6	Maintenance Manager (Agriculture)	Project Engineering Manager (Agriculture)		Electrical & Instrumentation Manager (Agriculture)
LEVEL 5	Maintenance Technologist (Agriculture)	Mechanical Technologist (Agriculture)	Project Technologist (Agriculture)	Instrumentation Technologist (Agriculture)
LEVEL 4	Assistant Technologist (Agriculture)			
LEVEL 3	Engineering Technician (Agriculture)			
LEVEL 2	Engineering Assistant Technician (Agriculture)			
LEVEL 1	NA			

*Critical Job Title

SECTOR	AGRICULTURE BIOTECHNOLOGY
SUB-SECTOR	BIOINFORMATICS
LEVEL 8	NA
LEVEL 7	Bioinformatics Director (Agriculture)
LEVEL 6	Bioinformatics Manager (Agriculture)
LEVEL 5	<i>Bioinformatician*(Agriculture)</i>
LEVEL 4	<i>Assistant Bioinformatician*(Agriculture)</i>
LEVEL 3	NA
LEVEL 2	NA
LEVEL 1	NA

**Critical Job Title*

SECTOR	HEALTHCARE BIOTECHNOLOGY		
SUB-SECTOR	CONTRACT MANUFACTURING ORGANISATION (CMO)/CONTRACT RESEARCH ORGANISATION (CRO)/MEDICAL DEVICES & DIAGNOSTIC/PHARMACEUTICALS/BIPHARMACEUTICALS/THERAPEUTICS TECHNOLOGIES		
JOB AREA	R&D DIVISION		
SUB JOB AREA	Product Enhancement	Product Development	Clinical/ Pre-clinical
LEVEL 8		NA	
LEVEL 7		R&D Principal (Healthcare)	Clinical Research Director (Healthcare)
LEVEL 6	R&D Manager (Healthcare)	Scientist (Healthcare)	Clinical Research Manager (Healthcare)
LEVEL 5	R&D Executive (Healthcare)*	Research Officer (Healthcare)*	Clinical Research Associate (Healthcare)*
LEVEL 4	R&D Supervisor (Healthcare)	Research Assistant (Healthcare)*	Clinical Research Officer (Healthcare)*
LEVEL 3	R&D Technician (Healthcare)*	Lab Technician (Healthcare)	NA
LEVEL 2		NA	
LEVEL 1		NA	

*Critical Job Title

SECTOR	HEALTHCARE BIOTECHNOLOGY		
SUB-SECTOR	CONTRACT MANUFACTURING ORGANISATION (CMO)/CONTRACT RESEARCH ORGANISATION (CRO)/MEDICAL DEVICES & DIAGNOSTIC/PHARMACEUTICALS/BIOPHARMACEUTICALS/THERAPEUTICS TECHNOLOGIES		
JOB AREA	PRODUCTION		
SUB JOB AREA	Administration	Processing	Packaging
LEVEL 8		NA	NA
LEVEL 7		Production Director (Healthcare)	NA
LEVEL 6		Production Manager (Healthcare)	NA
LEVEL 5	<i>Production Executive (Healthcare)*</i>	Process Technologist (Healthcare)	NA
LEVEL 4		Production Supervisor (Healthcare)	
LEVEL 3	Production Assistant (Healthcare)	Process Leader (Healthcare)	Shift Leader (Healthcare)
LEVEL 2	NA	Production Technician (Healthcare)	Packaging Leader (Healthcare)
LEVEL 1		General Worker (Healthcare)	

**Critical Job Title*

SECTOR	HEALTHCARE BIOTECHNOLOGY			
SUB-SECTOR	CONTRACT MANUFACTURING ORGANISATION (CMO)/CONTRACT RESEARCH ORGANISATION (CRO)/MEDICAL DEVICES & DIAGNOSTIC/PHARMACEUTICALS/BIPHARMACEUTICALS/THERAPEUTICS TECHNOLOGIES			
JOB AREA	SALES & MARKETING			
SUB JOB AREA	Customer Service	Technical Services	Marketing	Sales
LEVEL 8		NA		
LEVEL 7		Sales & Marketing Director (Healthcare)		
LEVEL 6	Customer Service Manager (Healthcare)*	Technical Service Manager (Healthcare)	Marketing Manager (Healthcare)	Sales Manager (Healthcare)
LEVEL 5	Customer Service Executive (Healthcare)*	Technical Service Executive (Healthcare)*	Marketing Executive (Healthcare)*	Sales Executive (Healthcare)*
LEVEL 4	Customer Service Assistant (Healthcare)	Technical Service Assistant (Healthcare)	Marketing Assistant (Healthcare)	Sales Assistant (Healthcare)
LEVEL 3		NA		
LEVEL 2		NA		
LEVEL 1		NA		

*Critical Job Title

SECTOR	HEALTHCARE BIOTECHNOLOGY	
SUB-SECTOR	CONTRACT MANUFACTURING ORGANISATION (CMO)/CONTRACT RESEARCH ORGANISATION (CRO)/MEDICAL DEVICES & DIAGNOSTIC/PHARMACEUTICALS/BIPHARMACEUTICALS/THERAPEUTICS TECHNOLOGIES	
JOB AREA	LOGISTICS & WAREHOUSING	
SUB JOB AREA	Logistic	Warehouse
LEVEL 8	NA	
LEVEL 7	Supply Chain Director (Healthcare)	
LEVEL 6	Logistic Manager (Healthcare)	Warehouse Manager (Healthcare)
LEVEL 5	<i>Logistic Executive (Healthcare) *</i>	<i>Warehouse Executive (Healthcare) *</i>
LEVEL 4	Logistic Assistant (Healthcare)	Warehouse Supervisor (Healthcare)
LEVEL 3	Storekeeper (Healthcare)	
LEVEL 2	Forklift Driver (Healthcare)	
LEVEL 1	Store Handler (Healthcare)	

**Critical Job Title*

SECTOR	HEALTHCARE BIOTECHNOLOGY		
SUB-SECTOR	CONTRACT MANUFACTURING ORGANISATION (CMO)/CONTRACT RESEARCH ORGANISATION (CRO)/MEDICAL DEVICES & DIAGNOSTIC/PHARMACEUTICALS/BIPHARMACEUTICALS/THERAPEUTICS TECHNOLOGIES		
JOB AREA	QUALITY ASSURANCE/QUALITY CONTROL/QUALITY MANAGEMENT		
SUB JOB AREA	Quality Assurance	Quality Control	Quality Management
LEVEL 8	NA		
LEVEL 7	Quality Assurance/Quality Control/Quality Management Director (Healthcare)		
LEVEL 6	Quality Assurance Manager (Healthcare)*	Quality Control Manager (Healthcare)	Quality Management Manager (Healthcare)
LEVEL 5	Quality Assurance Executive (Healthcare)*	Quality Control Executive (Healthcare)*	Document Controller (Healthcare)
LEVEL 4	Quality Assurance Assistant (Healthcare)	Quality Control Assistant (Healthcare)	NA
LEVEL 3	NA	Quality Control Technician (Healthcare)	NA
LEVEL 2	NA	Quality Control Inspector (Healthcare)	NA
LEVEL 1	NA		

*Critical Job Title

SECTOR	HEALTHCARE BIOTECHNOLOGY		
SUB-SECTOR	CONTRACT MANUFACTURING ORGANISATION (CMO)/CONTRACT RESEARCH ORGANISATION (CRO)/MEDICAL DEVICES & DIAGNOSTIC/PHARMACEUTICALS/BIPHARMACEUTICALS/THERAPEUTICS TECHNOLOGIES		
JOB AREA	HEALTH, SAFETY & ENVIRONMENT (HSE)		
SUB JOB AREA	Environment		Health & Safety
LEVEL 8		NA	
LEVEL 7		Health, Safety & Environment Director (Healthcare)	
LEVEL 6	Environmental Manager (Healthcare)		Occupational Health & Safety Manager (Healthcare)
LEVEL 5	Environmental Executive (Healthcare)		<i>Health & Safety Executive (Healthcare) *</i>
LEVEL 4	<i>Waste Treatment Supervisor (Healthcare) *</i>		Health & Safety Officer (Healthcare)
LEVEL 3	<i>Waste Treatment Technician (Healthcare) *</i>		Health & Safety Technician (Healthcare)
LEVEL 2	Waste Treatment Assistant (Healthcare)		NA
LEVEL 1		NA	

**Critical Job Title*

SECTOR	HEALTHCARE BIOTECHNOLOGY		
SUB-SECTOR	CONTRACT MANUFACTURING ORGANISATION (CMO)/CONTRACT RESEARCH ORGANISATION (CRO)/MEDICAL DEVICES & DIAGNOSTIC/PHARMACEUTICALS/BIPHARMACEUTICALS/THERAPEUTICS TECHNOLOGIES		
JOB AREA	REGULATORY AFFAIRS		
SUB JOB AREA	Compliance	Regulatory	
LEVEL 8	NA		
LEVEL 7		Regulatory Director (Healthcare)	
LEVEL 6		Regulatory Affairs Manager (Healthcare)	
LEVEL 5	Compliance Executive (Healthcare)*		Regulatory Affairs Executive (Healthcare)*
LEVEL 4	Compliance Assistant Executive (Healthcare)*		Regulatory Affairs Assistant Executive (Healthcare)*
LEVEL 3	NA		
LEVEL 2	NA		
LEVEL 1	NA		

*Critical Job Title

SECTOR	HEALTHCARE BIOTECHNOLOGY			
SUB-SECTOR	CONTRACT MANUFACTURING ORGANISATION (CMO)/CONTRACT RESEARCH ORGANISATION (CRO)/MEDICAL DEVICES & DIAGNOSTIC/PHARMACEUTICALS/BIPHARMACEUTICALS/THERAPEUTICS TECHNOLOGIES			
JOB AREA	ENGINEERING			
SUB JOB AREA	Maintenance	Project Engineering		Electrical & Instrumentation
LEVEL 8	NA			
LEVEL 7	Engineering & Maintenance Director (Healthcare)			
LEVEL 6	Maintenance Manager (Healthcare)	Project Engineering Manager (Healthcare)		Electrical & Instrumentation Manager (Healthcare)
LEVEL 5	Maintenance Technologist (Healthcare)	Mechanical Technologist (Healthcare)	Project Technologist (Healthcare)	Instrumentation Technologist (Healthcare)
LEVEL 4	Assistant Technologist (Healthcare)			
LEVEL 3	Engineering Technician (Healthcare)			
LEVEL 2	Engineering Assistant Technician (Healthcare)			
LEVEL 1	NA			

*Critical Job Title

SECTOR SUB-SECTOR	HEALTHCARE BIOTECHNOLOGY	
	BIOINFORMATICS	
LEVEL 8	NA	
LEVEL 7	Bioinformatics Director (Healthcare)	
LEVEL 6	Bioinformatics Manager (Healthcare)	
LEVEL 5	<i>Bioinformatician*(Healthcare)</i>	
LEVEL 4	<i>Assistant Bioinformatician*(Healthcare)</i>	
LEVEL 3	NA	
LEVEL 2	NA	
LEVEL 1	NA	

*Critical Job Title

SECTOR	INDUSTRIAL BIOTECHNOLOGY	
SUB-SECTOR	BIOFUELS/BIO-REMEDIATION/BIO-CATALYSTS/FINE&SPECIALTY CHEMICALS/BIOPOLYMER	
JOB AREA	R&D DIVISION (INDUSTRIAL)	
SUB JOB AREA	Product Enhancement	Product Development
LEVEL 8	NA	
LEVEL 7	R&D Principal (Industrial)	
LEVEL 6	R&D Manager(Industrial)	Scientist (Industrial)
LEVEL 5	R&D Executive *(Industrial)	Research Officer *(Industrial)
LEVEL 4	R&D Supervisor (Industrial)	Research Assistant *(Industrial)
LEVEL 3	R&D Technician *(Industrial)	Lab Technician (Industrial)
LEVEL 2	NA	
LEVEL 1	NA	

*Critical Job Title

SECTOR	INDUSTRIAL BIOTECHNOLOGY		
SUB-SECTOR JOB AREA	BIOFUELS/BIO-REMEDIATION/BIO-CATALYSTS/FINE&SPECIALTY CHEMICALS/BIOPOLYMER PRODUCTION (INDUSTRIAL)		
SUB JOB AREA	Administration	Processing	Packaging
LEVEL 8	NA		
LEVEL 7	Production Director (Industrial)		NA
LEVEL 6	Production Manager (Industrial)		NA
LEVEL 5	Production Executive *(Industrial)	Process Technologist (Industrial)	NA
LEVEL 4	Production Supervisor(Industrial)		
LEVEL 3	ProductionAssistant (Industrial)	Process Leader (Industrial)	Shift Leader (Industrial)
LEVEL 2	NA	Production Technician (Industrial)	Packaging Leader (Industrial)
LEVEL 1	General Worker (Industrial)		

*Critical Job Title

SECTOR	INDUSTRIAL BIOTECHNOLOGY			
SUB-SECTOR	BIOFUELS/BIO-REMEDIATION/BIO-CATALYSTS/FINE&SPECIALTY CHEMICALS/BIOPOLYMER			
JOB AREA	SALES & MARKETING (INDUSTRIAL)			
SUB JOB AREA	Customer Service	Technical Services	Marketing	Sales
LEVEL 8	NA			
LEVEL 7	Sales & Marketing Director (Industrial)			
LEVEL 6	Customer Service Manager *(Industrial)	Technical Service Manager (Industrial)	Marketing Manager (Industrial)	Sales Manager (Industrial)
LEVEL 5	Customer Service Executive *(Industrial)	Technical Service Executive *(Industrial)	Marketing Executive *(Industrial)	Sales Executive *(Industrial)
LEVEL 4	Customer Service Assistant (Industrial)	Technical Service Assistant (Industrial)	Marketing Assistant (Industrial)	Sales Assistant (Industrial)
LEVEL 3	NA			
LEVEL 2	NA			
LEVEL 1	NA			

*Critical Job Title

SECTOR	INDUSTRIAL BIOTECHNOLOGY	
SUB-SECTOR	BIOFUELS/BIO-REMEDIATION/BIO-CATALYSTS/FINE&SPECIALTY CHEMICALS/BIOPOLYMER	
JOB AREA	LOGISTICS & WAREHOUSING (INDUSTRIAL)	
SUB JOB AREA	Logistic	Warehouse
LEVEL 8	NA	
LEVEL 7	Supply Chain Director (Industrial)	
LEVEL 6	Logistic Manager(Industrial)	Warehouse Manager (Industrial)
LEVEL 5	<i>Logistic Executive *(Industrial)</i>	<i>Warehouse Executive *(Industrial)</i>
LEVEL 4	Logistic Assistant (Industrial)	Warehouse Supervisor (Industrial)
LEVEL 3	Storekeeper (Industrial)	
LEVEL 2	Forklift Driver (Industrial)	
LEVEL 1	Store Handler (Industrial)	

*Critical Job Title

SECTOR	INDUSTRIAL BIOTECHNOLOGY		
SUB-SECTOR	BIOFUELS/BIO-REMEDIATION/BIO-CATALYSTS/FINE&SPECIALTY CHEMICALS/BIOPOLYMER		
JOB AREA	QUALITY ASSURANCE/QUALITY CONTROL/QUALITY MANAGEMENT (INDUSTRIAL)		
SUB JOB AREA	Quality Assurance	Quality Control	Quality Management
LEVEL 8	NA		
LEVEL 7	Quality Assurance/Quality Control/Quality Management Director(Industrial)		
LEVEL 6	Quality Assurance Manager *(Industrial)	Quality Control Manager(Industrial)	Quality Management Manager (Industrial)
LEVEL 5	Quality Assurance Executive *(Industrial)	Quality Control Executive *(Industrial)	Document Controller (Industrial)
LEVEL 4	Quality Assurance Assistant (Industrial)	Quality Control Assistant (Industrial)	NA
LEVEL 3	NA	Quality Control Technician (Industrial)	NA
LEVEL 2	NA	Quality Control Inspector (Industrial)	NA
LEVEL 1	NA		

*Critical Job Title

SECTOR	INDUSTRIAL BIOTECHNOLOGY		
SUB-SECTOR	BIOFUELS/BIO-REMEDIATION/BIO-CATALYSTS/FINE&SPECIALTY CHEMICALS/BIOPOLYMER		
JOB AREA	HEALTH, SAFETY & ENVIRONMENT (HSE) (INDUSTRIAL)		
SUB JOB AREA	Environment	Health & Safety	
LEVEL 8	NA		
LEVEL 7	Health , Safety & Environment Director (Industrial)		
LEVEL 6	Environmental Manager (Industrial)	Occupational Health & Safety Manager (Industrial)	
LEVEL 5	Environmental Executive (Industrial)	Health & Safety Executive *(Industrial)	
LEVEL 4	Waste Treatment Supervisor *(Industrial)	Health & Safety Officer (Industrial)	
LEVEL 3	Waste Treatment Technician *(Industrial)	Health & Safety Technician (Industrial)	
LEVEL 2	Waste Treatment Assistant (Industrial)	NA	
LEVEL 1	NA		

**Critical Job Title*

SECTOR	INDUSTRIAL BIOTECHNOLOGY		
SUB-SECTOR	BIOFUELS/BIO-REMEDIATION/BIO-CATALYSTS/FINE&SPECIALTY CHEMICALS/BIOPOLYMER		
JOB AREA	REGULATORY AFFAIRS (INDUSTRIAL)		
SUB JOB AREA	Compliance	Regulatory	
LEVEL 8	NA		
LEVEL 7		Regulatory Director (Industrial)	
LEVEL 6		Regulatory Affairs Manager (Industrial)	
LEVEL 5	Compliance Executive *(Industrial)		Regulatory Affairs Executive *(Industrial)
LEVEL 4	Compliance Assistant Executive *(Industrial)		Regulatory Affairs Assistant Executive *(Industrial)
LEVEL 3		NA	
LEVEL 2		NA	
LEVEL 1		NA	

*Critical Job Title

SECTOR	INDUSTRIAL BIOTECHNOLOGY			
SUB-SECTOR	BIOFUELS/BIO-REMEDIATION/BIO-CATALYSTS/FINE&SPECIALTY CHEMICALS/BIOPOLYMER			
JOB AREA	ENGINEERING (INDUSTRIAL)			
SUB JOB AREA	Maintenance	Project Engineering		Electrical & Instrumentation
LEVEL 8	NA			
LEVEL 7	Engineering & Maintenance Director (Industrial)			
LEVEL 6	Maintenance Manager (Industrial)	Project Engineering Manager (Industrial)		Electrical & Instrumentation Manager (Industrial)
LEVEL 5	Maintenance Technologist (Industrial)	Mechanical Technologist (Industrial)	Project Technologist (Industrial)	Instrumentation Technologist (Industrial)
LEVEL 4	Assistant Technologist (Industrial)			
LEVEL 3	Engineering Technician (Industrial)			
LEVEL 2	Engineering Assistant Technician (Industrial)			
LEVEL 1	NA			

*Critical Job Title

SECTOR SUB-SECTOR	INDUSTRIAL BIOTECHNOLOGY	
	BIOINFORMATICS	
LEVEL 8	NA	
LEVEL 7	Bioinformatics Director (Industrial)	
LEVEL 6	Bioinformatics Manager (Industrial)	
LEVEL 5	<i>Bioinformatician *(Industrial)</i>	
LEVEL 4	<i>Assistant Bioinformatician *(Industrial)</i>	
LEVEL 3	NA	
LEVEL 2	NA	
LEVEL 1	NA	

**Critical Job Title*

ANNEX 5:

**CRITICAL AND NON-
CRITICAL
JOB TITLES SUMMARY**

SUMMARY OF CRITICAL AND NON CRITICAL JOB TITLES

SECTOR	JOB AREA/ LEVEL		LEVEL									Total
			NL	L1	L2	L3	L4	L5	L6	L7	L8	
Agriculture Biotechnology	Research & Development Division	Critical		0	0	4	7	11	3	2	0	27
		Non-Critical		0	1	4	3	0	7	5	0	20
	Production/ Reproduction Division	Critical		0	2	4	3	5	0	1	0	15
		Non-Critical		1	4	3	2	1	4	1	0	16
	Sales & Marketing Division	Critical		0	0	0	0	4	1	0	0	5
		Non-Critical		0	0	0	4	0	3	1	0	8
	Logistics & Warehousing	Critical		0	0	0	0	2	0	0	0	2
		Non-Critical		1	1	1	2	0	2	1	0	8
	QA/ QC/ QM Division	Critical		0	0	0	0	2	1	0	0	3
		Non-Critical		0	1	1	2	1	2	1	0	8
	Health, Safety & Environment Division	Critical		0	0	1	1	1	0	0	0	3
		Non-Critical		0	1	1	1	1	2	1	0	7
	Regulatory Affairs Division	Critical		0	0	0	2	2	0	0	0	4
		Non-Critical		0	0	0	0	0	1	1	0	2
Engineering Division	Critical		0	0	0	0	0	0	0	0	0	
	Non-Critical		0	1	1	1	4	3	1	0	11	
Bioinformatics	Critical		0	0	0	1	1	0	0	0	2	
	Non-Critical		0	0	0	0	0	1	1	0	2	
Healthcare Biotechnology	Research & Development Division	Critical		0	0	1	2	3	0	0	0	6
		Non-Critical		0	0	1	1	0	3	2	0	7
	Production Division	Critical		0	0	0	0	1	0	0	0	1
		Non-Critical		1	2	3	1	1	1	1	0	10
	Sales & Marketing Division	Critical		0	0	0	0	4	1	0	0	5
		Non-Critical		0	0	0	4	0	3	1	0	8
	Logistics & Warehousing	Critical		0	0	0	0	2	0	0	0	2
		Non-Critical		1	1	1	2	0	2	1	0	8
	QA/ QC/ QM Division	Critical		0	0	0	0	2	1	0	0	3
		Non-Critical		0	1	1	2	1	2	1	0	8
	Health, Safety & Environment Division	Critical		0	0	1	1	1	0	0	0	3
		Non-Critical		0	1	1	1	1	2	1	0	7
	Regulatory Affairs Division	Critical		0	0	0	2	2	0	0	0	4
		Non-Critical		0	0	0	0	0	1	1	0	2
Engineering Division	Critical		0	0	0	0	0	0	0	0	0	
	Non-Critical		0	1	1	1	4	3	1	0	11	
Bioinformatics	Critical		0	0	0	1	1	0	0	0	2	
	Non-Critical		0	0	0	0	0	1	1	0	2	
Industrial Biotechnology	Research & Development Division	Critical		0	0	1	1	2	0	0	0	4
		Non-Critical		0	0	1	1	0	2	1	0	5
	Production Division	Critical		0	0	0	0	1	0	0	0	1
		Non-Critical		1	2	3	1	1	1	1	0	10
	Sales & Marketing Division	Critical		0	0	0	0	4	1	0	0	5
		Non-Critical		0	0	0	4	0	3	1	0	8
	Logistics & Warehousing	Critical		0	0	0	0	2	0	0	0	2
		Non-Critical		1	1	1	2	0	2	1	0	8
	QA/ QC/ QM Division	Critical		0	0	0	0	2	1	0	0	3
		Non-Critical		0	1	1	2	1	2	1	0	8
	Health, Safety & Environment Division	Critical		0	0	1	1	1	0	0	0	3
		Non-Critical		0	1	1	1	1	2	1	0	7
	Regulatory Affairs Division	Critical		0	0	0	2	2	0	0	0	4
		Non-Critical		0	0	0	0	0	1	1	0	2
Engineering Division	Critical		0	0	0	0	0	0	0	0	0	
	Non-Critical		0	1	1	1	4	3	1	0	11	
Bioinformatics	Critical		0	0	0	1	1	0	0	0	2	
	Non-Critical		0	0	0	0	0	1	1	0	2	
Total			Critical									111
			Non-Critical									206
				6	23	40	64	80	69	35	0	317

ANNEX 6:

**OCCUPATIONAL
DEFINITIONS
FOR THE AGRICULTURE
BIOTECHNOLOGY**

ANNEX 6.1:

RESEARCH AND DEVELOPMENT DIVISION

Annex 6.1.1:

R&D

(Product Enhancement)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

RESEARCH AND DEVELOPMENT TECHNICIAN (AGRICULTURE)

A RESEARCH AND DEVELOPMENT TECHNICIAN (AGRICULTURE) IS DESIGNATED TO PERFORM A VARIETY OF BASIC TESTS TO DETERMINE THE FUNCTIONALITY OF PRODUCTS AND FUTURE DEVELOPMENTS, ASSISTING PRODUCT MANAGEMENT WITH VIABLE SOLUTIONS, COLLABORATING WITH OTHER TEAM MEMBERS FOR FUTURE DEVELOPMENTS, CONDUCTING PRODUCT DESIGN TESTS, ASSEMBLING PROTOTYPES AND COLLECTING DATA IN SUPPORT OF PRODUCT DEVELOPMENT AND BUSINESS UNIT EFFORTS.

A Research and Development Technician (Agriculture) will be able to:

1. Perform basic test to determine the functionality of products;
2. Conduct product design testing;
3. Assemble prototype of the product;
4. Identify raw material needs from R&D formula;
5. Gather raw materials from onsite samples or orders appropriately;
6. Inspect the defection of product; and
7. Clean equipment after use.

Pre-requisites:

- i. Academic Qualification: Possess minimum certificate in Science or equivalent
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

RESEARCH AND DEVELOPMENT SUPERVISOR (AGRICULTURE)

A RESEARCH AND DEVELOPMENT SUPERVISOR (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR SUPERVISING THE ACTIVITIES OF EVALUATING THE QUALITY AND STABILITY OF IN-PROCESS AND FINAL PRODUCT MATERIALS IN ACCORDANCE WITH STANDARD GUIDELINES.

A Research and Development Supervisor (Agriculture) will be able to:

1. Work with vendors and manufacturers to ensure that their compliance with quality standards and health regulations and company guidelines;
2. Assist the development and execution of material planning strategies that support objectives such as supplier transitions while maintaining continuity of supply;
3. Understand business processes, systems and technology to analyse problems and develop solutions;
4. Become the material planning process and drive continuous improvement to inventory management;
5. Provide input for Material Resource Planning (MRP); and
6. Support the forecasting and planning strategies in line with Production Schedule.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Science or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

RESEARCH AND DEVELOPMENT EXECUTIVE (AGRICULTURE)

A RESEARCH AND DEVELOPMENT EXECUTIVE (AGRICULTURE) IS DESIGNATED TO WORK CLOSELY WITH TEAMS FOR TECHNICAL DEVELOPMENT, DOCUMENTATION, TESTING, EXPLORING AND DEPLOYMENT OF APPLICATION.

A Research and Development Executive (Agriculture) will be able to

1. Assist R&D Manager in contributing with relevant information and proposals to the Management;
2. Monitor R&D activities to ensure compliance to standards and specifications;
3. Monitor vendors and manufacturers in compliance to product and material specification;
4. Assist with the development and execution of material planning strategies that support objectives such as supplier transitions while maintaining continuity of supply;
5. Understand business processes, systems and technology to analyse problems and develop solutions;
6. Review documents, such as research programme, manpower planning and specifications to obtain information, such as materials, priorities, and personnel requirements;
7. Confer with establishment personnel, vendors, and manufacturers in ensuring project's scientific resources;
8. Complete status reports, such as research progress, customers feedback and materials inventory; and
9. Assist in identifying and coordinating accredited and non-accredited training for the R&D team.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

RESEARCH AND DEVELOPMENT MANAGER (AGRICULTURE)

A RESEARCH AND DEVELOPMENT MANAGER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR SAFETY, PURITY AND AFFICACY OF THE OVERALL DIRECTION OF A SPECIFIC PROJECT(S) WITHIN THE R&D DEPARTMENT'S SCHEDULE AND BUDGET.

A Research and Development Manager (Agriculture) will be able to:

1. Manage and develop the research and conservation of projects;
2. Manage the science and research aspect of the R&D activities including staff management, communications, projects, scientific reporting and R&D promotion;
3. Identify funding and work opportunities and to develop sponsorship and promotional activities;
4. Observe project activities through reporting system and advise or enforce change as necessary;
5. Manage installation and implementing a detailed biotechnical laboratory research work plan to fulfil company's research objective; and
6. Understand business processes, systems and technology to analyse problems and develop solutions.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science or equivalent
- ii. Experience: Minimum 5-10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

RESEARCH AND DEVELOPMENT PRINCIPAL (AGRICULTURE)

A RESEARCH AND DEVELOPMENT PRINCIPAL (AGRICULTURE) IS DESIGNATED TO LEAD AND PROVIDE DIRECTION TO RESEARCH TEAM IN DEVELOPING NEW IDEAS AND SCIENTIFIC DISCOVERIES WHICH CAN BE UTILISED IN THE MANUFACTURE AND APPLICATION OF NEW PRODUCTS. THEY ARE CAPABLE OF UNDERSTANDING AND CONTROLLING THE PROCESSES USED TO PRODUCE THE FINAL PRODUCT.

A Research and Development Principle (Agriculture) will be able to:

1. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and manufacturing;
2. Provide professional and personal leadership to research team in R&D Department;
3. Plan and formulate aspects of research and development proposals;
4. Review and analyses proposals submitted to determine if benefits derived and possible applications justify expenditures;
5. Approve and submit proposals considered feasible to management for consideration and allocation of funds or allocates funds to department budget;
6. Develop and implement methods and procedures for monitoring projects in order to inform management of current status of each project; and
7. Develop goals and objectives for staff.

Pre-requisites:

- i. Academic Qualification: Possess minimum PhD in Science or equivalent.
- ii. Experience: 15-20 years

ANNEX 6.1.2:

R&D

(Product Development)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

LAB TECHNICIAN (AGRICULTURE)

A LAB TECHNICIAN (AGRICULTURE) IS DESIGNATED TO HANDLE ROUTINELY SPECIFIC GENERIC EQUIPMENT AND EXPERIMENTAL PROCEDURES. HE/SHE THEREFORE ASSISTS WITH GUIDANCE OF HIS/HER SUPERVISORS IN THE EXECUTION OF SPECIFIC TASKS IN THE GENERATION OF DATA FOR SPECIFIC PROJECT (TASKS) IMPLEMENTED IN THE BIOTECHNOLOGY LABORATORY.

A Lab Technician (Agriculture) will be able to:

1. Prepare basic reagents and media for experiments;
2. Prepare experimental samples;
3. Prepare and use generic equipment;
4. Record and update laboratory data/log book;
5. Undertake housekeeping (cleaning, sample disposal, sterilisation, keeps track of consumables and spare parts);
6. Collect sample, maintaining equipments and facilities on farm laboratory; and
7. Ensure all activities conform to safety procedures in accordance to the organisation's Standard Operating Procedures (SOP).

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in Science or equivalent
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

RESEARCH ASSISTANT (AGRICULTURE)

AN RESEARCH ASSISTANT (AGRICULTURE) IS DESIGNATED TO ASSIST RESEARCH OFFICER AND SCIENTIST TO CONDUCT RESEARCH IN ORDER TO PRODUCE NEW PRODUCT, EVALUATE MATERIALS AND DEVELOP MACHINERY, EQUIPMENT AND PROCESSES TO MANUFACTURE MATERIALS TO BE USED IN PRODUCTS THAT MUST MEET SPECIALISED DESIGN AND PERFORMANCE SPECIFICATIONS.

An Research Assistant (Agriculture) will be able to:

1. Assist the Research Officer in the development and implementation of the research programme of research to cover each survey component;
2. Assist the Research Officer in the accredited and non-accredited training of the volunteer Research Assistants;
3. Assist the Research Officer in managing the collection and processing of accurate field data, including specimen collection, for all survey components;
4. Assist the Research Officer in managing and supervising the maintenance of the project's scientific resources; and
5. Analyse verbal or statistical data to prepare reports and studies to be used by professional workers in variety of areas.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Science or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

RESEARCH OFFICER (AGRICULTURE)

A RESEARCH OFFICER (AGRICULTURE) IS DESIGNATED TO ASSIST THE SCIENTIST IN CARRYING OUT THE RESEARCH PROJECT. THE RESEARCH OFFICER WILL BE RESPONSIBLE FOR TOOL DEVELOPMENT AND THE DESIGN, COLLECTION AND ANALYSIS OF EVALUATIVE PROJECT DATA. THE RESEARCH OFFICER WILL WORK CLOSELY WITH THE INDUSTRY PARTNERS IN THE PROJECT.

A Research Officer (Agriculture) will be able to:

1. Perform research on the project under the direction of the Scientist;
2. Participate in the development of a framework, methods and tools to support research activities;
3. Design evaluative instruments;
4. Analyse project data;
5. Draft scientific reports on the project;
6. Coordinate research activities;
7. Supervise all laboratory staffs under his/her supervision;
8. Provide coaching to all laboratory staffs under his/her supervision; and
9. Conduct training to all laboratory staffs under his/her supervision.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

FOOD ASSISTANT TECHNOLOGIST (AGRICULTURE)

FOOD ASSISTANT TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO ASSIST FOOD TECHNOLOGIST TO APPLIES SCIENTIFIC AND ENGINEERING PRINCIPLES IN RESEARCH, DEVELOPMENT, PRODUCTION TECHNOLOGY, QUALITY CONTROL, PACKAGING, PROCESSING, AND UTILISATION OF FOODS. THEY WORK ON EXISTING AND NEWLY DISCOVERED INGREDIENTS AND TECHNOLOGIES TO INVENT NEW RECIPES AND CONCEPTS AND MODIFY FOODS TO CREATE.

An Assistant Food Technologist (Agriculture) will be able to:

1. Assist technologist develop new and improved methods and systems for food processing, production, quality control, packaging, and distribution;
2. Study methods to improve quality of foods, such as flavor, color, texture, nutritional value, convenience, or physical, chemical, and microbiological composition of foods;
3. Develop food standards, safety and sanitary regulations, and waste management and water supply specifications;
4. Conduct experiments and producing sample products, as well as designing the processes and machinery for making products with a consistent flavour, colour and texture in large quantities;
5. Modify existing products and processes and developing new ones; and
6. Assist in checking and improve quality control procedures in own and suppliers' factories, from the raw material stage through to the finished product.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Food Technology or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

FOOD TECHNOLOGIST (AGRICULTURE)

A FOOD TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO APPLY SCIENTIFIC AND ENGINEERING PRINCIPLES IN RESEARCH, DEVELOPMENT, PRODUCTION TECHNOLOGY, QUALITY CONTROL, PACKAGING, PROCESSING, AND UTILISATION OF FOODS. THEY WORK ON EXISTING AND NEWLY DISCOVERED INGREDIENTS AND TECHNOLOGIES TO INVENT NEW RECIPES AND CONCEPTS AND MODIFY FOODS TO CREATE.

A Food Technologist (Agriculture) will be able to:

1. Develop new and improved methods and systems for food processing, production, quality control, packaging, and distribution;
2. Study methods to improve quality of foods, such as flavor, color, texture, nutritional value, convenience, or physical, chemical, and microbiological composition of foods;
3. Develop food standards, safety and sanitary regulations, and waste management and water supply specifications;
4. Test new product in test kitchen and develops specific processing methods in laboratory pilot plant, and confers with process engineers, flavor experts, and packaging and marketing specialists to resolve problems;
5. Conduct experiments and producing sample products, as well as designing the processes and machinery for making products with a consistent flavour, colour and texture in large quantities;
6. Modify existing products and processes and developing new ones;
7. Check and improve quality control procedures in your own and suppliers' factories, from the raw material stage through to the finished product; and
8. Research current consumer markets and latest technologies to develop new product concepts;

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Food Technology or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

SCIENTIST (AGRICULTURE)

A SCIENTIST (AGRICULTURE) IS DESIGNATED TO DEVELOP NEW PRODUCTS AND WORK WITH RESEARCH TEAM TO DEVELOP NEW IDEAS AND SCIENTIFIC DISCOVERIES, WHICH CAN BE UTILISED IN THE MANUFACTURE AND APPLICATION OF NEW PRODUCTS. THEY ARE CAPABLE OF UNDERSTANDING AND CONTROLLING THE PROCESSES USED TO PRODUCE THE FINAL PRODUCT.

A Scientist (Agriculture) will be able to:

1. Plan and conduct experiments and analysing or interpreting the results;
2. Discuss research progress with other departments, e.g. production and marketing (in industry);
3. Devise methods for making products at the required scale;
4. Generate data to substantiate claims regarding the safety and efficacy of new products (this applies particularly to the pharmaceutical healthcare, food and feed sector);
5. Assist the integration of new products with other commercial areas, including brand development, sales strategy and quality assurance, legal, marketing and manufacturing;
6. Formulate and establish product design and performance objectives, normally in consultation with other functions, including research, marketing and production, as well as contractors, suppliers, and customers; and
7. Participate in scientific meetings and conferences in sharing professional experiences with other researchers.

Pre-requisites:

- i. Academic Qualification: Possess minimum PhD in Science or equivalent
- ii. Experience: 7 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

RESEARCH AND DEVELOPMENT PRINCIPAL (AGRICULTURE)

A RESEARCH AND DEVELOPMENT PRINCIPAL (AGRICULTURE) IS DESIGNATED TO LEAD AND PROVIDE DIRECTION TO RESEARCH TEAM IN DEVELOPING NEW IDEAS AND SCIENTIFIC DISCOVERIES WHICH CAN BE UTILISED IN THE MANUFACTURE AND APPLICATION OF NEW PRODUCTS. THEY ARE CAPABLE OF UNDERSTANDING AND CONTROLLING THE PROCESSES USED TO PRODUCE THE FINAL PRODUCT.

A Research and Development Principal (Agriculture) will be able to:

1. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and manufacturing;
2. Provide professional and personal leadership to research team in R&D Department;
3. Plan and formulate aspects of research and development proposals;
4. Review and analyse proposals submitted to determine if benefits derived and possible applications justify expenditures;
5. Approve and submit proposals considered feasible to management for consideration and allocation of funds or allocates funds to department budget;
6. Review the development and implementation of methods and procedures for monitoring projects in order to inform management of current status of each project; and
7. Develop goals and objectives for staff.

Pre-requisites:

- i. Academic Qualification: Possess minimum PhD in Science or equivalent
- ii. Experience: Minimum 15 years

ANNEX 6.1.3:

R&D

(Seed/Mutation Breeding)



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 2**

AGRICULTURE ASSISTANT TECHNICIAN (AGRICULTURE)

AN AGRICULTURE ASSISTANT TECHNICIAN (AGRICULTURE) IS DESIGNATED TO COORDINATE LAND PREPARATION ACTIVITIES, PLANTING SITE PREPARATION ACTIVITIES, FOOD CROPS AND FLORICULTURE NURSERY PREPARATION, ESTIMATE PLANTING MATERIALS REQUIREMENT, COORDINATE PLANTS MAINTENANCE ACTIVITIES, CONDUCT FERTILISING ACTIVITIES, COORDINATE PEST CONTROL ACTIVITIES, FARM INFRASTRUCTURE MAINTENANCE, HARVESTING ACTIVITIES, POST-HARVEST HANDLING, GRADING ACTIVITIES AND CONDUCT FARM WASTE BY PRODUCT ACTIVITIES.

An Agriculture Assistant Technician (Agriculture) will be able to:

1. Perform planting site preparation activities;
2. Prepare planting materials requirement;
3. Perform plant's maintenance activities;
4. Perform fertilising activities;
5. Perform pest control activities;
6. Perform farm infrastructure maintenance;
7. Perform harvesting activities;
8. Perform grading activities; and
9. Handle farm waste by-product activities.

Pre-requisites:

- i. Academic Qualification: Possess at least a Certificate in Agriculture
- ii. Experience: Not necessary



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 3**

AGRICULTURE TECHNICIAN (AGRICULTURE)

AN AGRICULTURE TECHNICIAN (AGRICULTURE) IS DESIGNATED TO SUPERVISE LAND PREPARATION ACTIVITIES, PLANTING SITE PREPARATION ACTIVITIES, FOOD CROPS AND FLORICULTURE NURSERY PREPARATION, COORDINATE PURCHASING OF PLANTING MATERIALS, SUPERVISE PLANTS MAINTENANCE ACTIVITIES, COORDINATE FERTILISING ACTIVITIES, SUPERVISE PEST CONTROL ACTIVITIES, FARM INFRASTRUCTURE MAINTENANCE, HARVESTING ACTIVITIES, POST-HARVEST HANDLING, CONDUCT SUPERVISORY ACTIVITIES, MARKETING ACTIVITIES, SUPERVISE FARM WASTE BY PRODUCT ACTIVITIES AND COORDINATE DOWNSTREAM ACTIVITIES.

An Agriculture Technician (Agriculture) will be able to:

1. Supervise planting site preparation activities;
2. Supervise food crops and floriculture nursery preparation;
3. Supervise purchasing of planting materials;
4. Supervise plant's maintenance activities;
5. Supervise fertilising activities;
6. Supervise pest control activities;
7. Supervise farm infrastructure maintenance;
8. Supervise harvesting activities;
9. Conduct agriculture technical support activities for client;
10. Supervise farm waste by-product activities; and
11. Coordinate storage activities.

Pre-requisites:

- i. Academic Qualification: Possess at least a Certificate in related field
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT AGRONOMIST (AGRICULTURE)

AN ASSISTANT AGRONOMIST (AGRICULTURE) IS DESIGNATED TO ASSIST AGRONOMIST IN EXPERIMENTS OR INVESTIGATIONS IN FIELD-CROP PROBLEMS AND DEVELOPS NEW METHODS OF GROWING CROPS TO SECURE MORE EFFICIENT PRODUCTION, HIGHER YIELD, AND IMPROVED QUALITY.

An Assistant Agronomist (Agriculture) will be able to:

1. Provide assistant in planning breeding studies to improve varieties;
2. Assist in discovery for best practices in crop production;
3. Assist in developing methods for pest and disease control;
4. Assist in implementing study to improve varieties; and
5. Assist in managing supply-chain activities.

Pre-requisites:

- i. Academic Qualification: Possess at least a Certificate in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

AGRONOMIST (AGRICULTURE)

AN AGRONOMIST (AGRICULTURE) IS DESIGNATED TO CONDUCT EXPERIMENTS OR INVESTIGATIONS IN FIELD-CROP PROBLEMS AND DEVELOP NEW METHODS OF GROWING CROPS TO SECURE MORE EFFICIENT PRODUCTION, HIGHER YIELD, AND IMPROVED QUALITY.

An Agronomist (Agriculture) will be able to:

1. Plan breeding studies to improve varieties;
2. Conduct research to discover best practices in crop production;
3. Develop methods for pest and disease control;
4. Implement study to improve varieties;
5. Manage supply-chain activities;and
6. Maintain detail records throughout the research and development cycle;

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Agriculture
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

NURSERY MANAGER (AGRICULTURE)

A NURSERY MANAGER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE IN MANAGING RESEARCH SITE AND NURSERY ACTIVITIES.

A Nursery Manager (Agriculture) will be bale to:

1. Manage daily site activities;
2. Establish Standard Operating Procedure (SOP) for research and nursery activities;
3. Prepare periodic operation and management report;
4. Prepare operational budget for management approval;
5. Prepare research report for customer;
6. Organise promotional activities to potencial client; and
7. Ensure all personnel are edequately trained and certified.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Agriculture or related field
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

PLANT BREEDER (AGRICULTURE)

A PLANT BREEDER (AGRICULTURE) IS DESIGNATED TO APPLY A RANGE OF TECHNIQUES TO PRODUCE NEW AND IMPROVED VARIETIES OF PLANTS. THEIR ROLE IS VITAL TO THE AGRICULTURAL INDUSTRY, ALLOWING IT TO INCREASE AND MAINTAIN YIELDS IN IMPORTANT CROPS GROWN FOR MANY USES, SUCH AS FOOD AND PHARMACEUTICALS.

A Plant Breeder (Agriculture) will be able to:

1. Oversee the integration of new plant with other commercial areas, including brand development, sales strategy, quality, marketing and farming;
2. Provide professional and personal leadership;
3. Plan and formulate aspects of research and development for improvement in plant breeding;
4. Oversee plant selection and screening activities for desirable traits;
5. Manage supporting and training technical and field staff;
6. Keep up to date in the fast-moving area of science and translating ideas from scientific literature into new approaches to breeding problems;
7. Respond to enquiries from farmers, agronomists and other professionals;
8. Write and present work to other scientists and publishing scientific findings; and
9. Manage and allocate operational budget.

Pre-requisites:

- i. Academic Qualification: Possess minimum Master Degree in Agriculture related fields
- ii. Experience: Minimum 10 years

ANNEX 6.1.4:

R&D

(Tissue Culture)



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 3**

LAB ASSISTANT (AGRICULTURE)

A LAB ASSISTANT (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE IN PERFORMING A WIDE VARIETY OF RESEARCH LABORATORY TASKS AND EXPERIMENTS, MAKING DETAILED OBSERVATIONS, ANALYSING DATA, AND INTERPRETING RESULTS.

A Lab Assistant (Agriculture) will be able to:

1. Perform a variety of procedures to assist R&D team in the pre-analytical and post-analytical stages;
2. Test production samples and incoming materials for strict adherence to preset parameters;
3. Provide general assistance to R&D team as needed including clerical support;
4. Maintain cleanliness of the laboratory;
5. Detail check and record of test result;
6. Perform any other related duties or ad-hoc assignment as and when required by superior; and
7. Perform propagation activities.

Pre-requisites:

- i. Academic Qualification: Possess at least a Diploma in Agriculture related field
- ii. Experience: Minimum 1 year



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

TISSUE CULTURIST (AGRICULTURE)

A TISSUE CULTURIST (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE IN PROPOGATING PLANTS AND PRODUCING CLONES OF A PLANT.

A Tissue Culturist (Agriculture) will be able to:

1. Assist in conducting research to discover improved varieties in crop production;
2. Assist in maintaining detail records throughout the research and development cycle;
3. Assist in maintaining plant tissue culture laboratory;
4. Record tissue culture data; and
5. Supervise propogation activities.

Pre-requisites:

- i. Qualification: Minimum Degree in Agriculture related fields
- ii. Experience : Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

PLANT TECHNOLOGIST (AGRICULTURE)

A PLANT TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE IN ENSURING PLANT PROPOGATION AND PRODUCTION OF CLONES.

A Plant Technologist (Agriculture) will be able to:

1. Plan propagation and tissue culture studies to improve varieties;
2. Conduct research to discover best practices in propagation and tissue culture production;
3. Implement study to improve cloned varieties;
4. Manage distribution of cultured plants; and
5. Maintain detail records throughout the research and development cycle.

Pre-requisites:

- i. Qualification: Possess minimum Degree in Agriculture related fields
- ii. Experience: 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

CULTURE LAB MANAGER (AGRICULTURE)

A CULTURE LAB MANAGER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR THE GENERATION OF CELL LINES PRODUCING RECOMBINANT PROTEINS ACCORDING TO AGREED TIMELINES, ESTABLISH AND MAINTAIN THE COMPANY'S TISSUE CULTURE FACILITIES AND RESPONSIBLE FOR THE DEVELOPMENT OF STANDARD OPERATING PROCEDURES, ENSURING REGULATORY AND SAFETY COMPLIANCE AT ALL TIMES.

A Culture Lab Manager (Agriculture) will be able to:

1. Manage daily lab activities;
2. Establish Standard Operating Procedure (SOP) for research and lab activities;
3. Prepare periodic operation and management report;
4. Prepare operational budget for management approval;
5. Prepare research report for customer;
6. Organise promotional activities to potential client;
7. Ensure all personnel are adequately trained and certified; and
8. Manage the development and implementation of systems, processes, plans and policies for the tissue culture facility.

Pre-requisites:

- i. Academic Qualification: Possess at least a PhD in related field
- ii. Experience: Minimum 7 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

PLANT BREEDER (AGRICULTURE)

A PLANT BREEDER (AGRICULTURE) IS DESIGNATED TO APPLY A RANGE OF TECHNIQUES TO PRODUCE NEW AND IMPROVED VARIETIES OF PLANTS. THEIR ROLE IS VITAL TO THE AGRICULTURAL INDUSTRY, ALLOWING IT TO INCREASE AND MAINTAIN YIELDS IN IMPORTANT CROPS GROWN FOR MANY USES, SUCH AS FOOD AND PHARMACEUTICALS.

A Plant Breeder (Agriculture) will be able to:

1. Oversee the integration of new plant with other commercial areas, including brand development, sales strategy, quality, marketing and farming;
2. Provide professional and personal leadership to Seed/Mutation Breeding Research Team;
3. Plan and formulate aspects of research and development for improvement in plant breeding;
4. Oversee plant selection and screening activities for desirable traits;
5. Manage supporting and training technical and field staff;
6. Keep up to date in the fast-moving area of science and translating ideas from scientific literature into new approaches to breeding problems;
7. Respond to enquiries from farmers, agronomists and other professionals;
8. Write and present work to other scientists and publishing scientific findings; and
9. Manage and allocate operational budget.

Pre-requisites:

- i. Academic Qualification: Possess minimum Master Degree in Agriculture related fields
- ii. Experience: Minimum 10 years

ANNEX 6.1.5:

R&D

(GMO – Crops)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

LAB ASSISTANT (AGRICULTURE)

A LAB ASSISTANT (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR PERFORMING A WIDE VARIETY OF RESEARCH LABORATORY TASKS AND EXPERIMENTS, MAKING DETAILED OBSERVATIONS, ANALYSING DATA, AND INTERPRETING RESULTS.

A Lab Assistant (Agriculture) will be able to:

1. Perform a variety of procedures to assist R&D team in the pre-analytical and post-analytical stages;
2. Test production samples and incoming materials for strict adherence to preset parameters;
3. Provide general assistance to R&D team as needed including clerical support;
4. Maintain cleanliness of the laboratory;
5. Detail check and record of test result; and
6. Perform any other related duties or ac-hoc assignment as and when required by superior.

Pre-requisites:

- i. Academic Qualification: Possess at least a SPM/Diploma in Biology, Biotechnology, Chemistry, Science and Technology or equivalent.
- ii. Experience: Minimum 1 year experience working in the manufacturing and/or laboratory environment



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

TISSUE CULTURIST (AGRICULTURE)

A TISSUE CULTURIST (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE IN PROPOGATING PLANTS AND PRODUCING CLONES OF A PLANT.

A Tissue Culturist (Agriculture) will be able to:

1. Establish and maintain a plant tissue culture laboratory;
2. Assist in the setting up of clonal trials;
3. Coordinate the collection of tissue culture data;
4. Document and analyse tissue culture data; and
5. Supervise propagation activities.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science or Science-related technology.
- ii. Experience : Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

**GENETIC MODIFICATION ORGANISM PLANT TECHNOLOGIST
(AGRICULTURE)**

GENETIC MODIFICATION ORGANISM PLANT TECHNOLOGIST (AGRICULTURE) RESPONSIBLE TO MANIPULATE AND MODIFIES THE GENES, OR HEREDITARY MAKEUP, OF MICROORGANISM AND PLANT. SPECIALISTS IN THE FIELD OF GENETICS AND CONDUCT RESEARCH IN A BROAD RANGE OF BIOLOGICAL SCIENCES INCLUDING BIOCHEMISTRY, BOTANY AND MICROBIOLOGY.

A Genetic Modification Organism Plant Technologist (Agriculture) will be able to:

1. Develop strains of bacteria that improve the effects of antibiotics and other useful pharmaceutical products;
2. Conduct clinical tests to diagnose hereditary diseases and to circumvent infertility in humans have also been developed through genetic engineering;
3. Develop new crops that are more nutritious, disease-resistant, and able to flourish with less fertiliser;
4. Develop of microorganisms that can be used to detoxify industrial waste or to provide alternate fuel sources; and
5. Develop techniques with numerous important applications in the fields agriculture.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Biological Science
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

GENETIC MODIFICATION ORGANISM LAB MANAGER (AGRICULTURE)

GENETIC MODIFICATION ORGANISM LAB MANAGER (AGRICULTURE) WORK WITH RESEARCH SCIENTISTS IN THE DEVELOPMENT AND TESTING OF GENETICALLY ENGINEERED PRODUCTS. GENETIC MODIFICATION ORGANISATION LAB MANAGER IS THE SCIENCE CONCERNED WITH THE MANIPULATION OR MODIFICATION OF GENES IN PLANTS, ANIMALS, AND MICROORGANISMS.

A Genetic Modification Organism Lab Manager (Agriculture) will be able to:

1. Involve in isolating and altering genetic material from one organism and transplanting, or splicing it to another;
2. Produce purer and safer vaccines and other drugs for humans;
3. Develop new crop strains;
4. Perform most of the routine duties related to experimentation and new product development; and
5. Manage GMO Lab activities.

Pre-requisites:

- i. Academic Qualification: Possess minimum Bachelor's degree in Biological Science.
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY LEVEL 7

PLANT BREEDER (AGRICULTURE)

A PLANT BREEDER (AGRICULTURE) IS DESIGNATED TO APPLY A RANGE OF TECHNIQUES TO PRODUCE NEW AND IMPROVED VARIETIES OF PLANTS. THEIR ROLE IS VITAL TO THE AGRICULTURAL INDUSTRY, ALLOWING IT TO INCREASE AND MAINTAIN YIELDS IN IMPORTANT CROPS GROWN FOR MANY USES, SUCH AS FOOD AND PHARMACEUTICALS.

A Plant Breeder (Agriculture) will be able to:

1. Research methods and techniques for improving plant breeding;
2. Identify and select plants exhibiting desirable traits based on natural genetic variation;
3. Analyse and scientifically assessing progeny in laboratory and field trials, and selecting the best varieties;
4. Conduct scientific projects, which may be laboratory-based, especially in the winter months;
5. Multiply up and produce virus-free plants, using tissue culture for field trials;
6. Maintain detail records throughout the research and development cycle;
7. Manage supporting and training technical and field staff;
8. Keep up to date in the fast-moving area of science and translating ideas from scientific literature into new approaches to breeding problems;
9. Respond to enquiries from farmers, agronomists and other professionals;
10. Write and present work to other scientists and publishing scientific findings; and
11. Use advanced and sophisticated molecular biology techniques to study and manipulate genes, including DNA transfer within or between species.

Pre-requisite:

- i. Academic Qualification: Possess minimum Master Degree in Plant Breeding field
- ii. Experience: Minimum 10 year

ANNEX 6.1.6:

R&D

(Clinical/Pre-clinical)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

CLINICAL RESEARCH OFFICER (AGRICULTURE)

A CLINICAL RESEARCH OFFICER (AGRICULTURE) IS DESIGNATED TO ASSIST CLINICAL RESEARCH ASSOCIATE AND OTHER RESEARCH TEAM MEMBERS WITH THE PLANNING AND ONGOING ADMINISTRATION OF PROGRAMS AND RESEARCH ACTIVITIES.

A Clinical Research Officer (Agriculture) will be able to:

1. Conduct laboratory bench works in direct support of scientific and clinical projects;
2. Perform laboratory clinical related assays activities;
3. Maintain an accurate and complete record of work performed in laboratory;
4. Assist in managing Source Documents (SD) and Case Report Forms (CRF) for clinical trials to Good Clinical Practice (GCP) standards;
5. Assist in managing regulatory and administrative aspects of clinical trials in accordance with GCP standards;
6. Support the Establishment of Standard Operating Procedures (SOP) to guide regulatory and administrative aspects of clinical field trials; and
7. Responsible for the care of equipment and supplies, to include protection from environment, theft or damage.

Pre-requisite:

- i. Academic Qualification: Possess minimum Diploma in Science or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

CLINICAL RESEARCH ASSOCIATE (AGRICULTURE)

A CLINICAL RESEARCH ASSOCIATE (AGRICULTURE) IS DESIGNATED TO SET UP, MONITOR AND COMPLETE CLINICAL TRIALS. TRIALS NEED TO BE CARRIED OUT BEFORE A PRODUCT REACHES A HOSPITAL OR THE SHELVES OF THE LOCAL PHARMACY. THEY ARE UNDERTAKEN AT VARIOUS STAGES, OR 'PHASES', AND INCLUDE: TRIALS ON HEALTHY HUMANS; TRIALS ON PATIENTS WITH A DISEASE; AND STUDIES CONDUCTED AFTER THE LAUNCH OF A NEW PRODUCT TO MONITOR SAFETY AND SIDE EFFECTS DURING LARGE-SCALE USE.

A Clinical Research Associate (Agriculture) will be able to:

1. Responsible for the preparation, organisation and monitoring of clinical studies in accordance to International Standard (ICH-GCP);
2. Develop trial protocols (outlining the purpose and methodology of a trial) for endorsement by steering committee;
3. Coordinate with the ethics committee, which safeguards the rights, safety and wellbeing of all trial subjects;
4. Manage regulatory authority applications and approvals that oversee the research and marketing of new and existing drugs;
5. Prepare final study reports and occasionally manuscripts for publication; and
6. Responsible for mentoring and coaching Clinical Research Officer (CRO).

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science or equivalent
- ii. Experience: 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

CLINICAL RESEARCH MANAGER (AGRICULTURE)

A CLINICAL RESEARCH MANAGER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR THE PREPARATION OF PROTOCOLS AND CASE REPORT FORMS, FINALISATION OF MONITORING AND DATA MANAGEMENT OPTIONS (EITHER IN-HOUSE OR CONTRACTED TO A CONTRACT RESEARCH ORGANISATION), ETHICS COMMITTEE APPROVAL, DEVELOPMENT OF RECRUITMENT STRATEGIES TO INCREASE PATIENT RANDOMISATION INTO THE TRIAL, THE PROVISION OF CLINICAL TRIAL MATERIALS, AND MANAGEMENT OF THE TRIAL.

A Clinical Research Manager (Agriculture) will be able to:

1. Manage, plan and implement all activities required to conduct and monitor complex clinical trials and ensures that International Standard (ICH-GCP) are followed;
2. Manage Source Documents (SD) and Case Report Forms (CRF) for clinical trials to Good Clinical Practice (GCP) standards;
3. Manage regulatory and administrative aspects of clinical trials in accordance with GCP standards;
4. Establish Standard Operating Procedures (SOP) to guide regulatory and administrative aspects of clinical field trials;
5. Makes decisions on recruitment/selection of new investigators, contract research organisations and outside vendors;
6. Coordinate all trials by identifying and managing qualified clinical personnel;
7. Establish audit procedures and ensuring that cleaned data is entered into the database;
8. Responsible for the financial management of the clinical trial programme including budget planning, resource allocation and preparation of quarterly reports; and
9. Coordinate manuscripts preparation for technical journals.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science or equivalent
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

CLINICAL RESEARCH DIRECTOR (AGRICULTURE)

A CLINICAL RESEARCH DIRECTOR (AGRICULTURE) IS DESIGNATED TO DEVELOP AND MAINTAIN LIAISON AMONG OUTSIDE PHYSICIANS, CLINICAL INVESTIGATORS, MEDICAL EDUCATORS, AND DEPARTMENT HEADS IN MEDICAL SCHOOL, CROS, AFFILIATED HOSPITALS, STATE AND/OR GOVERNMENT HOSPITALS, AND RESEARCH INSTITUTIONS TO INITIATE AND EXPEDITE CLINICAL STUDIES ON PRODUCTS (BOTH IDE AND POST-APPROVAL).

A Clinical Research Director (Agriculture) will be able to:

1. Primary liaison with Customers, Vendors, Senior Management and/or Investigative Teams;
2. Direct clinical studies to ensure the contracted services and expectation of clinical study meeting customer expectation;
3. Ensure adherence to internal and customer quality standards, SOPs, GCPs and ICH guidelines;
4. Manage the executed contract and financial aspects of large full scope or multiple protocol assigned projects/programmes;
5. Review and approving study budgets and expenses;
6. Facilitate team training in accordance with protocol and/or project requirements; and
7. Oversee the regulatory document collection and submission process.

Pre-requisites:

- i. Academic Qualification: Possess minimum Medical Degree or equivalent
- ii. Experience: Minimum 10 years

ANNEX 6.1.7:

R&D

(Artificial Insemination)
(Livestocks/Aqua and Marine)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

VETERINARY TECHNICIAN (AGRICULTURE)

A VETERINARY TECHNICIAN (AGRICULTURE) IS DESIGNATED TO SUPPORT THE VETERINARIANS IN ENSURING QUALITY VETERINARY CARE FOR ALL PETS, ADVOCATE FOR PETS, EDUCATE CLIENTS ON ALL ASPECTS OF PET HEALTH, AND ENSURE A SAFE AND EFFECTIVE HOSPITAL ENVIRONMENT.

A Veterinary Technician (Agriculture) will be able to:

1. Clean cages, pens, trays, equipment and fittings;
2. Ensure animal are fed, kept, cleaned and comfortable;
3. Handle and move animals safely;
4. Ensure holding environment meets meet quality health standard;
5. Monitor animal's condition for any behavioural changes;
6. Resolve animal's behavioral problem;
7. Obtain samples and measurements;and
8. Collect and record animal monitoring data;

Pre-requisites:

- i. Academic Qualification: Minimum Certificate in Veterinary or related fields.
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

VETERINARY ASSISTANT TECHNOLOGIST (AGRICULTURE)

A VETERINARY ASSISTANT TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO ASSIST TECHNOLOGIST TO COORDINATE ARTIFICIAL INSEMINATION, WELFARE OF LIVESTOCK/SLAUGHTER, CONDUCT PREGNANCY DIAGNOSIS, SPECIFY SEMEN QUALITY (SPERM NUMBER, EXPIRY), COORDINATE MATING AND FEEDING ACTIVITIES, SELECT LIVESTOCK FOR BREEDING AND COORDINATE LIVESTOCK HEALTH ACTIVITIES.

A Veterinary Assistant Technologist (Agriculture) will be able to:

1. Assist in coordination of artificial insemination and heat synchronisation procedures;
2. Assist in coordination of livestock welfare prior to slaughter;
3. Assist pregnancy diagnosis and heat detection procedures;
4. Assist in identifying reproductive specimen quality;
5. Conduct mating activities;
6. Assist in feeding activities;
7. Identify livestock for breeding; and
8. Assist livestock health activities.

Pre-requisites:

- i. Academic Qualification: Minimum Diploma in Veterinary or related fields.
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

VETERINARY TECHNOLOGIST (AGRICULTURE)

A VETERINARY TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO COORDINATE ARTIFICIAL INSEMINATION, WELFARE OF LIVESTOCK/SLAUGHTER, CONDUCT PREGNANCY DIAGNOSIS, SPECIFY SEMEN QUALITY (SPERM NUMBER, EXPIRY), COORDINATE MATING AND FEEDING ACTIVITIES, SELECT LIVESTOCK FOR BREEDING AND COORDINATE LIVESTOCK HEALTH ACTIVITIES

A Veterinary Technologist (Agriculture) will be able to:

1. Coordinate artificial insemination and heat synchronisation procedures;
2. Coordinate welfare of livestock prior to slaughter;
3. Conduct pregnancy diagnosis and heat detection procedures;
4. Identify reproductive specimen quality;
5. Coordinate mating activities;
6. Coordinate feeding activities;
7. Select livestock for breeding;
8. Coordinate livestock health activities;
9. Ensure compliance of all Standard Operating Procedure;
10. Ensure compliance of all Safety Procedure; and
11. Coordinate farm bio-security program.

Pre-requisites:

- i. Academic Qualification: Minimum degree in Veterinary or related fields
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

VETERINARY RESEARCHER (AGRICULTURE)

VETERINARY RESEARCHER (AGRICULTURE) IS DESIGNATED TO DEVELOP BETTER, MORE EFFICIENT WAYS OF PRODUCING AND PROCESSING MEAT, POULTRY, EGGS, AND MILK.

A Veterinary Research (Agriculture) will be able to:

1. Analyse food resources and mix energy-yielding raw materials with protein-rich products to form balanced diets;
2. Use mathematic-statistical and reproduction physiological methods to improve farm animals genetically in order to achieve faster growth and to produce more with less feed, or to yield a product of higher quality;
3. Concentrate on the quality of animal products by making full use of their knowledge of biochemistry, physiology and the entire spectrum of animal science;
4. Conduct research, development and management of private concerns in animal science;
5. Certify and grade livestock feed products; and
6. Advise agricultural producers on how to upgrade animal housing facilities properly, lower mortality rates, handle waste matter, or increase production of animal products, such as milk or eggs.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Veterinary or equivalent
- ii. Experience: minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

VETERINARY RESEARCH PRINCIPAL (AGRICULTURE)

VETERINARY RESEARCH PRINCIPAL (AGRICULTURE) IS DESIGNATED TO CONDUCT RESEARCH IN THE GENETICS, NUTRITION, REPRODUCTION, AND DEVELOPMENT OF DOMESTIC FARM ANIMALS IN ORDER TO FORMULATE MORE EFFICIENT WAYS OF PRODUCING AND PROCESSING MEAT, POULTRY, EGGS, AND MILK.

A Veterinary Research Principal (Agriculture) will be able to:

1. Consult agricultural producers on how to provide healthy and safe housing for their animals;
2. Advice agricultural producers on how to lower mortality rates and improve parasite and disease control;
3. Advice agricultural producers on how to dispose waste matter;
4. Research on new techniques to increase the production of animal products;
5. Involve in the selection and breeding of animals to create new strains of animals with desirable characteristics; and
6. Analyse different management practices, animal study ethics, processing methods, feeding techniques, and environmental conditions to determine their effect on the quality and quantity of animal products.

Pre-requisites:

- i. Academic Qualification: Possess minimum PhD in Veterinary or equivalent



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

AQUA AND MARINE TECHNICIAN (AGRICULTURE)

AN AQUA AND MARINE TECHNICIAN (AGRICULTURE) IS DESIGNATED TO PREPARE SAMPLING, TOOLS AND EQUIPMENTS FOR RESEARCH ACTIVITIES.

An Aqua and Marine Technician (Agriculture) will be able to:

1. Perform aqua-tank preparation activities;
2. Perform laboratory equipment maintenance;
3. Perform feeding activities;
4. Perform aqua and marine work area for safety and security;
5. Monitor fish health;
6. Monitor water quality; and
7. Monitor life support system equipment performance.

Pre-requisites:

- i. Academic Qualification: Minimum Certificate in Aqua and Marine or related fields;
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

AQUA AND MARINE ASSISTANT TECHNOLOGIST (AGRICULTURE)

AN AQUA AND MARINE ASSISTANT TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO ASSIST IN PREPARING OPERATIONAL BUDGET AND PLANNING, EVALUATING MANPOWER REQUIREMENT PLAN, PREPARING STAFF TRAINING PROGRAM AND ASSISTING IN PERFORMING MANAGERIAL DUTIES.

An Aqua and Marine Assistant Technologist (Agriculture) will be able to:

1. Coordinate aqua-tank preparation activities;
2. Coordinate laboratory equipment maintenance;
3. Coordinate feeding activities;
4. Coordinate aqua and marine work area for safety and security;
5. Assist aqua/marine health management activities;
6. Conduct water quality test; and
7. Assist in analysing life support system equipment performance.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Aqua and Marine or related fields
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

AQUA AND MARINE TECHNOLOGIST (AGRICULTURE)

AN AQUA AND MARINE TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO PROVIDE CONSULTATION SERVICES ON AQUA AND MARINE GROW OUT PROJECT, FARM MACHINE AND EQUIPMENT SPECIFICATION AND FARM OPERATION, MANPOWER REQUIREMENT AND MAINTENANCE GUIDELINE.

An Aqua and Marine Technologist (Agriculture) will be able to:

1. Assist in consultation services for aqua and marine industry;
2. Develop aqua/marine grow out projects for new entrepreneurs;
3. Advice on aqua/marine farm layout and design for new entrepreneurs;
4. Advice specification on machineries and aqua/marine farm equipments required for new entrepreneurs;
5. Advice guideline on aqua/marine farm operation, manpower requirement and maintenance for new entrepreneurs;
6. Conduct study on market analysis on aqua/marine; and
7. Conduct study on aqua/ \marine culture species and production schedule.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Aqua and Marine or equivalent
- ii. Experience: 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

AQUA AND MARINE RESEARCHER (AGRICULTURE)

AN AQUA AND MARINE RESEARCHER (AGRICULTURE) IS RESPONSIBLE FOR RESEARCH AND DEVELOPMENT IN COLLABORATION WITH OTHERS ON PROJECTS. THEY MAKE DETAILED OBSERVATIONS, ANALYSE DATA, AND INTERPRET RESULTS.

An Aqua and Marine Researcher (Agriculture) will be able to:

1. Prepare technical reports, summaries, protocols, and quantitative analysis on aqua/ marine development;
2. Assist in consultation services for aqua and marine industry;
3. Provide specification on machineries and aqua and marine equipments required;
4. Provide guideline on aqua and marine operation, manpower requirement and maintenance;
5. Provide financial analysis details on investment capital and aqua and marine returns; and
6. Suggest on aqua and marine culture species and production schedule.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Aqua and Marine or equivalent
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

AQUA AND MARINE RESEARCH PRINCIPAL (AGRICULTURE)

AN AQUA AND MARINE RESEARCH PRINCIPAL (AGRICULTURE) IS DESIGNATED TO LEAD AND PROVIDE DIRECTION TO RESEARCH TEAM IN DEVELOPING NEW IDEAS AND SCIENTIFIC DISCOVERIES WHICH CAN BE UTILISED IN THE AQUA AND MARINE LIVESTOCKS, PRODUCTION AND APPLICATION.

An Aqua and Marine Research Principle (Agriculture) will be able to:

1. Oversee the integration of aqua and marine new livestock with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and manufacturing;
2. Conduct consultation services for aqua and marine industry;
3. Provide professional and personal leadership to aqua and marine research team;
4. Plan and formulate aspects of research and development proposals;
5. Approve and submit proposals considered feasible to management for consideration and allocation of funds or allocates funds to department budget;
6. Develop and implement methods and procedures for monitoring projects in order to inform management of current status of each project;
7. Develop goals and objectives for staff; and
8. Provide consultation on investment capital and guidance on aqua and marine operation.

Pre-requisites:

- i. Academic Qualification: Possess minimum PhD in Science or equivalent
- ii. Experience: 10 years

ANNEX 6.1.8:

R&D

(GMO (Livestocks/

Aqua and Marine)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

ANIMAL GENETIC TECHNICIAN (AGRICULTURE)

AN ANIMAL GENETIC TECHNICIAN (AGRICULTURE) IS DESIGNATED TO SUPPORT THE GENETICIST IN ENSURING QUALITY LIVESTOCKS REPRODUCTION AND HEALTH THROUGH GENETICS TECHNOLOGY.

An Animal Genetic Technician (Agriculture) will be able to:

1. Clean cages, pens, trays, equipment and fittings;
2. Ensure animal are fed, kept, cleaned and comfortable;
3. Handle and move animals safely;
4. Ensure holding environment meets quality health standard;
5. Obtain samples and measurements;and
6. Record animal phenotypic genetics data;

Pre-requisites:

- i. Academic Qualification: Minimum Certificate in Veterinary or related fields.
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ANIMAL GENETIC ASSISTANT TECHNOLOGIST (AGRICULTURE)

AN ANIMAL GENETIC ASSISTANT TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO PROVIDE CARE FOR LABORATORY ANIMALS WHICH INCLUDE TECHNICAL PROCEDURES SUCH AS GENETICS IDENTIFICATION, COLLECTING BIOLOGICAL SAMPLES AND ADMINISTERING GENETICS ANALYSIS ACCORDINGLY.

An Animal Genetic Assistant Technologist (Agriculture) will be able to:

1. Perform general health evaluations of research animals;
2. Maintain accurate records and acts as a lead worker in care and husbandry duties;
3. Prepare treatment room for genetics examination of animals;
4. Perform routine laboratory genetics assay tests;
5. Assist professional personnel with research projects in commercial, public health, or research laboratories; and
6. Record animal genotypic genetics data.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Genetics
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

ANIMAL GENETIC TECHNOLOGIST (AGRICULTURE)

AN ANIMAL GENETIC TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO ASSIST IN PREPARATION FOR GENETICS ANALYSIS, DIAGNOSTICS AND TREATMENT OF DISEASES FOR ANIMAL.

An Animal Genetic Technologist (Agriculture) will be able to:

1. Assist in preparation of operational and developmental budget;
2. Perform laboratory genetics related assays activities;
3. Assist in processing specimen for genetics analysis;
4. Support the Establishment of Standard Operating Procedures (SOP) to guide regulatory and administrative aspects of genetics field trials; and
5. Responsible for the care of equipment and supplies, to include protection from environment, theft or damage;

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Genetics or equivalent
- ii. Experience: 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

ANIMAL GENETIC RESEARCHER (AGRICULTURE)

AN ANIMAL GENETIC RESEARCHER (AGRICULTURE) IS RESPONSIBLE FOR STUDY ABOUT VARIOUS APPLICATIONS OF GENETICS IN THE FIELD OF ANIMAL HUSBANDRY AND DAIRY TECHNOLOGY.

An Animal Genetic Researcher (Agriculture) will be able to:

1. Process samples, cell culture and preparation of chromosome materials;
2. Analyse slide preparations under a microscope to diagnose chromosome abnormalities;
3. Use an increasing number of novel molecular genetics techniques;
4. Liaise with other laboratory staff.
5. Prepare technical reports, summaries, protocols, and quantitative analyses;
6. Maintain familiarity with current scientific literature and contributes to the process of a project within scientific discipline;
7. Responsible for identifying patentable inventions and acting as principal investigator in conducting experiments;
8. Conduct consultation services for animal genetic industry;
9. Provide specification on machineries and animal genetic equipments required;
10. Provide guideline on animal genetic operation, manpower requirement and maintenance; and
11. Provide financial analysis details on investment capital and animal genetic returns.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Genetics or equivalent
- ii. Experience: Minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

ANIMAL GENETICIST PRINCIPAL (AGRICULTURE)

AN ANIMAL GENETICIST PRINCIPAL (AGRICULTURE) IS DESIGNATED TO LEAD AND PROVIDE DIRECTION TO RESEARCH TEAM IN DEVELOPING NEW IDEAS AND SCIENTIFIC DISCOVERIES WHICH CAN BE UTILISED IN THE LIVESTOCKS FARMING AND APPLICATION OF NEW PRODUCTS.

An Animal Geneticist Principal (Agriculture) will be able to:

1. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and livestock reproduction;
2. Provide professional and personal leadership to research team in R & D Department;
3. Plans and formulates aspects of research and development proposals;
4. Reviews and analyzes proposals submitted to determine benefits derived and possible applications in justifying expenditures;
5. Approves and submits proposals considered feasible to management for consideration and allocation of funds or allocates funds to department budget;
6. Develop and implement procedures for projects monitoring; and
7. Develop departmental goals and objectives.

Pre-requisites:

- i. Academic Qualification: Possess minimum PhD in Genetics or equivalent
- ii. Experience: 15 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

AQUA AND MARINE GENETIC TECHNICIAN (AGRICULTURE)

AN AQUA AND MARINE GENETIC TECHNICIAN (AGRICULTURE) IS DESIGNATED TO PROVIDE CARE FOR LABORATORY AQUA AND MARINE TO INCLUDE TECHNICAL PROCEDURES SUCH AS AQUA AND MARINE IDENTIFICATION, COLLECTING BIOLOGICAL SAMPLES AND ADMINISTERING MEDICATIONS.

An Aqua and Marine Genetic Technician (Agriculture) will be able to:

1. Perform general health evaluations of research aqua and marine;
2. Maintain accurate records and acts as a lead worker in care and husbandry duties;
3. Prepare treatment room for examination of aqua and marine, and holds or restrains aqua and marine during examination, treatment, or inoculation.
4. Administer injections, performs venipunctures and takes vital signs of aqua and marine; and
5. Perform routine laboratory tests, cares for and feeds laboratory aqua and marine, and assists professional personnel with research projects in commercial, public health, or research laboratories.

Pre-requisites:

- i. Academic Qualification: Minimum degree in aqua and marine or related technology.
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

**AQUA AND MARINE GENETIC ASSISTANT TECHNOLOGIST
(AGRICULTURE)**

AN AQUA AND MARINE GENETIC ASSISTANT TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO PROVIDE CARE FOR LABORATORY AQUA AND MARINE WHICH INCLUDE TECHNICAL PROCEDURES SUCH AS GENETICS IDENTIFICATION, COLLECTING BIOLOGICAL SAMPLES AND ADMINISTERING GENETICS ANALYSIS ACCORDINGLY.

An Aqua and Marine Genetic Assistant Technologist (Agriculture) will be able to:

1. Perform general health evaluations of aqua and marine research livestock;
2. Maintain accurate records and acts as a lead worker in genetics care duties;
3. Prepare treatment room for genetics examination of aqua and marine livestock;
4. Perform routine laboratory genetics assay tests;
5. Assist professional personnel with research projects in commercial, public health, or research laboratories; and
6. Record aqua and marine livestock genotypic genetics data;

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Genetics
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

AQUA AND MARINE GENETIC TECHNOLOGIST (AGRICULTURE)

AN AQUA AND MARINE GENETIC TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO ASSIST IN PREPARATION FOR GENETICS ANALYSIS, DIAGNOSTICS AND TREATMENT OF DISEASES FOR AQUA AND MARINE LIVESTOCKS.

An Aqua and Marine Genetic Technologist (Agriculture) will be able to:

1. Assist in preparation of operational and developmental budget;
2. Perform laboratory genetics related assays activities;
3. Assist in processing specimen for genetics analysis;
4. Support the Establishment of Standard Operating Procedures (SOP) to guide regulatory and administrative aspects of genetics field trials; and
5. Responsible for the care of equipment and supplies, to include protection from environment, theft or damage;

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Genetics
- ii. Experience: 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

AQUA AND MARINE GENETIC RESEARCHER (AGRICULTURE)

AN AQUA AND MARINE GENETIC RESEARCHER (AGRICULTURE) IS RESPONSIBLE FOR STUDY ABOUT VARIOUS APPLICATIONS OF GENETICS IN THE FIELD OF AQUA AND MARINE LIVESTOCKS TECHNOLOGY.

An Aqua and Marine Genetic Researcher (Agriculture) will be able to:

1. Process samples, cell culture and preparation of chromosome materials;
2. Analyse slide preparations under a microscope to diagnose chromosome abnormalities;
3. Use an increasing number of novel molecular genetics techniques;
4. Liaise with other laboratory personnel;
5. Prepare technical reports, summaries, protocols, and quantitative analyses;
6. Maintain familiarity with current scientific literature and contributes to the process of a project within scientific discipline;
7. Responsible for identifying patentable inventions and acting as principal investigator in conducting experiments;
8. Conduct consultation services for aqua and marine genetic industry;
9. Provide specification on machineries and aqua and marine genetic equipments required;
10. Provide guideline on aqua and marine genetic operation, manpower requirement and maintenance; and
11. Provide financial analysis details on investment capital and aqua and marine genetic returns.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Genetics or equivalent.
- ii. Experience: minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

AQUA AND MARINE GENETICIST PRINCIPAL (AGRICULTURE)

AN AQUA AND MARINE GENETICIST PRINCIPAL (AGRICULTURE) IS DESIGNATED TO LEAD AND PROVIDE DIRECTION TO RESEARCH TEAM IN DEVELOPING NEW IDEAS AND SCIENTIFIC DISCOVERIES WHICH CAN BE UTILISED IN THE AQUA AND MARINE LIVESTOCKS FARMING AND APPLICATION OF NEW PRODUCTS.

An Aqua and Marine Geneticist Principal (Agriculture) will be able to:

1. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and livestock reproduction;
2. Provide professional and personal leadership to research team in R&D Department;
3. Plan and formulate aspects of research and development proposals;
4. Review and analyse proposals submitted to determine benefits derived and possible applications in justifying expenditures;
5. Approve and submit proposals considered feasible to management for consideration and allocation of funds or allocates funds to department budget;
6. Develop and implement procedures for projects monitoring; and
7. Develop departmental goals and objectives.

Pre-requisites:

- i. Academic Qualification: Possess minimum PhD in Genetics or equivalent
- ii. Experience: 15 years

ANNEX 6.2:

PRODUCTION DIVISION

ANNEX 6.2.1:

Production (Administration)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

PRODUCTION ASSISTANT (AGRICULTURE)

A PRODUCTION ASSISTANT (AGRICULTURE) IS DESIGNATED TO PERFORM ADMINISTRATIVE ACTIVITIES IN ASSISTING SUPERVISOR THAT INCLUDE CHECKING AND PROCESS CONDITIONS OR PARAMETERS IN A PRODUCTION ACTIVITIES.

A Production Assistant (Agriculture) will be able to:

1. Assist in production planning and scheduling preparation;
2. Prepare daily production report on output, work in progress, production percentage and attendance to production supervisor;
3. Maintain all production records, data and documents;
4. Assists in compiling and review progress and reports to the management; and
5. Key in production data into Material Resources Programme (MRP).

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma or equivalent.
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

PRODUCTION SUPERVISOR (AGRICULTURE)

A PRODUCTION SUPERVISOR (AGRICULTURE) IS DESIGNATED TO DIRECTLY SUPERVISE AND COORDINATE ACTIVITIES OF PRODUCTION AND OPERATION WORKERS TO ENSURE SMOOTH AND SAFE OPERATION OF THE PRODUCTION PLANT IN ACHIEVING HIGH PRODUCTIVITY AND QUALITY PRODUCTS ACCORDING TO PRODUCT SPECIFICATION.

A Production Supervisor (Agriculture) will be able to:

1. Supervise and coordinate the activities of employees engaged in production or processing of goods;
2. Implement work schedules, assignment, and production sequences, to meet production goals;
3. Supervise standard achievement and production target based on company objectives, equipment and labor availability;
4. Coordinate operations and activities within departments or between departments;
5. Recommend or implement measures to motivate employees and improve production methods, equipment performance, product quality, or efficiency; and
6. Inform maintenance department of any defects and machinery breakdowns.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma or equivalent.
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

PRODUCTION EXECUTIVE (AGRICULTURE)

A PRODUCTION EXECUTIVE (AGRICULTURE) IS DESIGNATED TO COORDINATE AND EXPEDITE THE FLOW OF WORK AND MATERIALS WITHIN OR BETWEEN DEPARTMENTS OF AN ESTABLISHMENT ACCORDING TO PRODUCTION SCHEDULE.

A Production Executive (Agriculture) will be able to:

1. Review documents, such as production schedules, staffing table, and specifications to obtain information, such as materials, priorities, and personnel requirements;
2. Communicate with establishment personnel, vendors, and customers for effective processing and shipping;
3. Complete status reports, such as production progress, customer information, and materials inventory;
4. Examine documents, materials, and products, and monitor work processes for completeness, accuracy, and conformance to standards and specifications;
5. Monitor work progress, provide services, such as furnishing permits, tickets, and union information, and directs workers to expedite work flow;
6. Coordinate arrangement for delivery and distribute supplies and parts to expedite flow of materials to meet production schedules; and
7. Coordinate requisition and maintain inventory of materials and supplies to meet production demands.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

PRODUCTION MANAGER (AGRICULTURE)

A PRODUCTION MANAGER (AGRICULTURE) IS DESIGNATED TO PRIMARILY BE RESPONSIBLE FOR THE OVERALL SMOOTH OPERATION OF THE MANUFACTURING AND PRODUCTION. HE/SHE IS ABLE TO TROUBLESHOOT ALL PROCESS MALFUNCTIONS AND CARRY OUT IMMEDIATE CORRECTIVE ACTIONS. HE/SHE ALSO MANAGES ALL PRODUCTION MATTERS INCLUDING TRAINING, BUDGET, RECRUITMENT AND COORDINATE WITH THE MAINTENANCE AND QUALITY ASSURANCE MANAGERS TO ENSURE AN OPTIMAL OPERATION.

A Production Manager (Agriculture) will be able to:

1. Ensure all production and quality targets are met;
2. Ensure production costs are within budgetary targets;
3. Coordinate with other managers especially Maintenance, Quality Assurance, and higher management departments;
4. Look into the improvement and operation continuously;
5. Conduct troubleshooting exercises regularly; and
6. Ensure all personnel are adequately trained and certified.

Pre-requisite:

- i. Academic Qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

PRODUCTION DIRECTOR (AGRICULTURE)

A PRODUCTION DIRECTOR (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR DIRECTION OF COMPANY'S VISION AND MISSION, ANALYSING DATA, PRODUCTION SETTING AND BUDGET PREPARATION.

A Production Director (Agriculture) will be able to:

1. Provide professional and personal leadership on the operation and activities of the production division;
2. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and livestock reproduction;
3. Approve and submit proposals to management for consideration and allocation of funds to department budget;
4. Provide data and analyses to group management as well as local management to drive profitability and competitiveness;
5. Responsible for the setting up of product costing, inventory control, valuation and variance analysis;
6. Perform regular forecasts and productivity reviews together with supply chain and sales teams to provide data to management to implement corrective actions during operation review; and
7. Develop and direct goals and objectives.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 15 years

ANNEX 6.2.2:

Production (Processing)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

GENERAL WORKER (AGRICULTURE)

A GENERAL WORKER (AGRICULTURE) IS UNDER DIRECTION TO PERFORM ROUTINE TASKS IN ENSURING THE WORKING ENVIRONMENT IS ORGANISED, CLEAN AND TIDY, ASSIST IN A WIDE VARIETY OF BASIC SERVICES, DELIVERY AND MAINTENANCE JOBS AS REQUIRED BY THE NEEDS OF THE ORGANISATION.

A General Worker (Agriculture) will be able to:

1. Perform variety of routine tasks to assist in production activities;
2. Keep equipment and working area clean and orderly;
3. Separates product according to weight, grade, size, and composition of material used to produce product;
4. Adhere to all safety procedures; and
5. Assist in preparation of process materials.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM Certificate
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

A PRODUCTION TECHNICIAN (AGRICULTURE)

A PRODUCTION TECHNICIAN (AGRICULTURE) IS DESIGNATED TO PERFORM ACTIVITIES SUCH AS CHECKING AND RECORDING PROCESS CONDITIONS OR PARAMETERS IN A PRODUCTION ACTIVITIES.

A Production Technician (Agriculture) will be able to:

1. Responsible for the operations and maintenance, troubleshooting and smooth running of operational equipments;
2. Responsible in overseeing work in progress (WIP) movements at the production area by monitoring and reporting cycle time and smooth production process;
3. Check and record process parameters in the plant routinely;
4. Maintain and upkeep process plant log book;
5. Inform immediate supervisor of deviation from optimum or normal operating conditions;
6. Inspect raw materials to assure proper ingredient and quality;
7. Assist the superior in manufacturing specific product related operation; and
8. Adhere to all safety procedures.

Pre-requisite:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

PROCESS LEADER (AGRICULTURE)

A PROCESS LEADER (AGRICULTURE) IS DESIGNATED TO LEAD AND COORDINATE A GROUP OF TECHNICIANS IN MANUFACTURING, PROCESSING, START-UP, SHUT-DOWN, EMERGENCY AND OTHER PRODUCTION ACTIVITIES IN A SAFE AND EFFECTIVE MANNER TO ACHIEVE THE QUALITY AND QUANTITY ACCORDING TO THE PRODUCTION PLAN.

A Process Leader (Agriculture) will be able to:

1. Lead and guide team of technician in performing production activities in achieving production target;
2. Lead in process troubleshooting and minor repair to reduce downtime;
3. Perform Health, Safety and Environmental protection activities to ensure safe handling of material and equipment;
4. Assist in the issuance of permit to work system;
5. Lead the operational maintenance work such as equipment cleaning and servicing;
6. Ensure all plant equipment is operated in a manner and condition to produce quality product; and
7. Ensure all subordinates follow Standard Operating Procedures (SOP).

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Manufacturing or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

PRODUCTION SUPERVISOR (AGRICULTURE)

A PRODUCTION SUPERVISOR (AGRICULTURE) IS DESIGNATED TO DIRECTLY SUPERVISE AND COORDINATE ACTIVITIES OF PRODUCTION AND OPERATION WORKERS TO ENSURE SMOOTH AND SAFE OPERATION OF THE PRODUCTION PLANT IN ACHIEVING HIGH PRODUCTIVITY AND QUALITY PRODUCTS ACCORDING TO PRODUCT SPECIFICATION.

A Production Supervisor (Agriculture) will be able to:

1. Supervise and coordinate the activities of employees engaged in production or processing of goods;
2. Implement work schedules, assignments, and production sequences, to meet production goals;
3. Supervise standard achievement and production target based on company objectives, equipment and labour availability;
4. Coordinate operations and activities within departments or between departments;
5. Recommend or implement measures to motivate employees and improve production methods, equipment performance, product quality, or efficiency; and
6. Inform maintenance department of any defects and machinery breakdowns.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

PROCESS TECHNOLOGIST (AGRICULTURE)

A PROCESS TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO DEVELOP AND IMPROVE PROCESSES OR MATERIALS TO ACHIEVE HIGHER OUTPUT AND SMOOTH OPERATION.

A Process Technologist (Agriculture) will be able to:

1. Lead supervisors in coordinating production operations and activities;
2. Conduct research and analytical studies to develop design or specifications for process improvement;
3. Direct and coordinates activities in designing, producing, creating and fabricating of equipment;
4. Confer with research and engineering personnel to clarify and resolve problems and prepare design modifications as needed;
5. Prepare or direct preparation of product processing through system layout and detailed drawings and schematics;
6. Analyse data to determine feasibility of process optimisation;
7. Plan and develop experimental test systems; and
8. Analyse test data and reports to determine if design meets functional and performance specifications.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

PRODUCTION MANAGER (AGRICULTURE)

A PRODUCTION MANAGER (AGRICULTURE) IS DESIGNATED TO PRIMARILY BE RESPONSIBLE FOR THE OVERALL SMOOTH OPERATION OF THE MANUFACTURING AND PRODUCTION. HE/SHE IS ABLE TO TROUBLESHOOT ALL PROCESS MALFUNCTIONS AND CARRY OUT IMMEDIATE CORRECTIVE ACTIONS. HE/SHE ALSO MANAGES ALL PRODUCTION MATTERS INCLUDING TRAINING, BUDGET, RECRUITMENT AND COORDINATE WITH THE MAINTENANCE AND QUALITY ASSURANCE MANAGERS TO ENSURE OPTIMAL OPERATION.

A Production Manager (Agriculture) will be able to:

1. Ensure all production and quality targets are met;
2. Ensure production costs are within budgetary targets;
3. Coordinate with other managers especially Maintenance, Quality Assurance, and higher management departments;
4. look into the improvement and operation continuously;
5. Conduct troubleshooting exercises regularly; and
6. Ensure all personnel are adequately trained and certified

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

PRODUCTION DIRECTOR (AGRICULTURE)

A PRODUCTION DIRECTOR (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR DIRECTION OF COMPANY'S VISION AND MISSION, ANALYSING DATA, PRODUCTION SETTING AND BUDGET PREPARATION.

A Production Director (Agriculture) will be able to:

1. Provide professional and personal leadership on the operation and activities of the production division;
2. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and livestock reproduction;
3. Approve and submit proposals to management for consideration and allocation of funds to department budget;
4. Provide data and analyses to group management as well as local management to drive profitability and competitiveness;
5. Responsible for the setting up of product costing, inventory control, valuation and variance analysis;
6. Perform regular forecasts and productivity reviews together with supply chain and sales teams to provide data to management to implement corrective actions during operation review; and
7. Develop and direct goals and objectives.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 15 years

ANNEX 6.2.3:

Production

(Packaging)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

GENERAL WORKER (AGRICULTURE)

A GENERAL WORKER (AGRICULTURE) IS UNDER DIRECTION TO PERFORM ROUTINE TASKS IN ENSURING THE WORKING ENVIRONMENT IS ORGANISED, CLEAN AND TIDY, ASSIST IN A WIDE VARIETY OF BASIC SERVICES, DELIVERY AND MAINTENANCE JOBS AS REQUIRED BY THE NEEDS OF THE ORGANISATION.

A General Worker (Agriculture) will be able to:

1. Perform variety of routine tasks to assist in production activities;
2. Keep equipment and working area clean and orderly;
3. Separates product according to weight, grade, size, and composition of material used to produce product;
4. Adhere to all safety procedures; and
5. Assist in preparation of process materials.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM Certificate
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

PACKAGING LEADER (AGRICULTURE)

A PACKING LEADER (AGRICULTURE) IS DESIGNATED TO LEAD A TEAM OF GENERAL WORKER IN INSPECTING, SORTING, SAMPLING, WEIGHING AND PACKING OF FINISHED GOODS.

A Packaging Leader (Agriculture) will be able to:

1. Perform finished goods weighing activities as per standard or customer requirement;
2. Prepare packaging materials according to product specification or customer requirement;
3. Inspect packed product for any defect or damages;
4. Collect sample of finished goods for Quality Assurance assessment;
5. Maintain and upkeep packaging records;
6. Inform immediate supervisor of deviation from optimum or normal operating conditions;
and
7. Adhere to all safety procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

SHIFT LEADER (AGRICULTURE)

A SHIFT LEADER (AGRICULTURE) IS DESIGNATED TO LEAD PACKAGING TEAM IN THE SHIFT IN INSPECTING, SORTING, SAMPLING, WEIGHING AND PACKING OF FINISHED GOODS.

A Shift Leader (Agriculture) will be able to:

1. Ensure finished goods weighing activities as per standard or customer requirement;
2. Ensure availability of packaging materials according to product specification or customer requirement;
3. Review any defect or damages to packed products;
4. Ensure sampling of finished goods for Quality Assurance assessment;
5. Maintain and upkeep packaging log books; and
6. Inform immediate supervisor of deviation from optimum or normal operating conditions;
7. Adhere to all safety procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

PRODUCTION SUPERVISOR (AGRICULTURE)

A PRODUCTION SUPERVISOR (AGRICULTURE) IS DESIGNATED TO DIRECTLY SUPERVISE AND COORDINATE ACTIVITIES OF PRODUCTION AND OPERATION WORKERS TO ENSURE THE SMOOTH AND SAFE OPERATION OF THE PRODUCTION PLANT IN ACHIEVING HIGH PRODUCTIVITY AND QUALITY PRODUCTS ACCORDING TO PRODUCT SPECIFICATION.

A Production Supervisor (Agriculture) will be able to:

1. Supervise and coordinate the activities of employees engaged in production or processing of goods;
2. Implement work schedules, assignments, and production sequences, to meet production goals;
3. Supervise standard achievement and production target based on company objectives, equipment and labor availability;
4. Coordinate operations and activities within departments or between departments;
5. Recommend or implement measures to motivate employees and improve production methods, equipment performance, product quality, or efficiency; and
6. Inform maintenance department of any defects and machinery breakdowns.

Pre-requisite:

- i. Academic Qualification: Possess minimum Diploma or equivalent
- ii. Experience: minimum 5 years

ANNEX 6.2.4:

Production (Seed/Mutation Breeding)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

GENERAL WORKER (AGRICULTURE)

A GENERAL WORKER (AGRICULTURE) IS UNDER DIRECTION TO PERFORM ROUTINE TASKS IN ENSURING THE WORKING ENVIRONMENT IS ORGANISED, CLEAN AND TIDY, ASSIST IN A WIDE VARIETY OF BASIC SERVICES, DELIVERY AND MAINTENANCE JOBS AS REQUIRED BY THE NEEDS OF THE ORGANISATION.

A General Worker (Agriculture) will be able to:

1. Perform variety of routine tasks to assist in production activities;
2. Keeps equipment and working area clean and orderly;
3. Separate product according to weight, grade, size, and composition of material used to produce product;
4. Adhere to all safety procedures; and
5. Assist in preparation of process materials.

Pre-requisite:

- i. Academic Qualification: Possess minimum SPM Certificate



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

SEEDLING ASSISTANT TECHNICIAN (AGRICULTURE)

A SEEDLING ASSISTANT TECHNICIAN (AGRICULTURE) IS DESIGNATED TO COMPILE DATA PERTAINING TO SIZE, NUMBER, CONTENT, CONDITION, AND OTHER CHARACTERISTICS OF PLANT TRAITS.

A Seedling Assistant Technician (Agriculture) will be able to:

1. Key in seedling production data into computer databases.
2. Conduct laboratory or field experiments with plants, pests, diseases and soils.
3. Perform seedling activities and plant protection;
4. Perform seedling equipment and green house maintenance; and
5. Perform plant crossing & selfing activities.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in Agriculture or related fields.
- ii. Experience: Not Necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

SEEDLING TECHNICIAN (AGRICULTURE)

A SEEDLING TECHNICIAN (AGRICULTURE) IS DESIGNATED TO SUPERVISE SEEDLING PRODUCTION ACTIVITIES INCLUDING PURCHASING PLANTING MATERIALS, FARM INFRASTRUCTURE MAINTENANCE, HARVESTING, POST-HARVEST HANDLING, CUSTOMER SUPPORT, WASTE TREATMENT AND DOWNSTREAM ACTIVITIES.

A Seedling Technician (Agriculture) will be able to:

1. Supervise planting site preparation activities;
2. Supervise food crops and floriculture nursery preparation;
3. Purchase planting materials;
4. Perform pest and disease control activities;
5. Supervise plants maintenance activities;
6. Supervise farm infrastructure maintenance;
7. Supervise harvesting and post-harvest activities;
8. Conduct customer support activities;
9. Coordinate downstream activities.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in Agriculture or equivalent.
- ii. Experience: Not Necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT AGRONOMIST (AGRICULTURE)

AN ASSISTANT AGRONOMIST (AGRICULTURE) IS DESIGNATED TO ASSIST AGRONOMIST IN EXPERIMENTS OR INVESTIGATIONS IN FIELD-CROP PROBLEMS AND DEVELOP NEW METHODS OF GROWING CROPS TO SECURE MORE EFFICIENT PRODUCTION, HIGHER YIELD, AND IMPROVED QUALITY.

An Assistant Agronomist (Agriculture) will be able to:

1. Assist in planning and scheduling of seedling production;
2. Assist the implementation of good agriculture practices in seedling production;
3. Coordinate pest and disease control activities;
4. Assist in implementing harvesting and post-harvest activities;
5. Assist in developing Standard Operating Procedure (SOP);
6. Maintain detailed records throughout the production cycle; and
7. Assist in managing supply-chain activities.

Pre-requisites:

- i. Academic Qualification: Possess at least a Diploma in Agriculture or related fields
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

AGRONOMIST (AGRICULTURE)

AN AGRONOMIST (AGRICULTURE) IS DESIGNATED TO CONDUCT ANALYSIS IN FIELD-CROP PROBLEMS AND DEVELOP NEW METHODS OF GROWING CROPS TO SECURE MORE EFFICIENT PRODUCTION, HIGHER YIELD, AND IMPROVED QUALITY.

An Agronomist (Agriculture) will be able to:

1. Plan seedling production;
2. Coordinate the implementation of good agriculture practices in seedling production;
3. Review and identify methods for pest and disease control;
4. Implement study to improve varieties and plant yield;
5. Obtain customer feedback on growth performance and plant yield;
6. Develop Standard Operating Procedure (SOP) for seedling production;
7. Manage supply-chain activities; and
8. Maintain detail records throughout the research and development cycle.

Pre-requisites:

- i. Qualification: Possess minimum Degree in Agriculture or related fields
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

NURSERY MANAGER (AGRICULTURE)

A NURSERY MANAGER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE IN MANAGING RESEARCH AND SEEDLING PRODUCTION SITE AND ALSO NURSERY ACTIVITIES.

A Nursery Manager (Agriculture) will be able to:

1. Manage daily site activities;
2. Review Standard Operating Procedure (SOP) for production activities;
3. Prepare periodic operation and management report;
4. Prepare operational budget for management approval;
5. Prepare research report for customer;
6. Organise promotional activities to potential client; and
7. Ensure all personnel are adequately trained and certified.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree Agriculture or related field
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

PLANT BREEDER (AGRICULTURE)

A PLANT BREEDER (AGRICULTURE) IS DESIGNATED TO APPLY A RANGE OF TECHNIQUES TO PRODUCE NEW AND IMPROVED VARIETIES OF PLANTS FOR SEEDLING PRODUCTION. THEIR ROLE IS VITAL TO THE AGRICULTURAL INDUSTRY, ALLOWING IT TO INCREASE AND MAINTAIN YIELDS IN IMPORTANT CROPS GROWN FOR VARIOUS INDUSTRIES.

A Plant Breeder (Agriculture) will be able to:

1. Oversee the integration of new plant with other commercial areas, including brand development, sales strategy, quality, marketing and farming;
2. Provide professional and personal leadership;
3. Plan and formulate aspects of research and development for improvement in seedling production;
4. Oversee plant selection and screening activities for desirable traits;
5. Manage supporting and training technical and field staff;
6. Keep up to date in the fast-moving area of science and translating ideas from scientific literature into new approaches to breeding problems;
7. Respond to enquiries from farmers, agronomists and other professionals;
8. Write and present work to other scientists and publishing scientific findings; and
9. Manage and allocate operational budget.

Pre-requisites:

- i. Academic Qualification: Possess minimum Master Degree in Agriculture related fields
- ii. Experience: Minimum 10 years

ANNEX 6.2.5

Production (Tissue Culture)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

GENERAL WORKER (AGRICULTURE)

A GENERAL WORKER (AGRICULTURE) IS UNDER DIRECTION TO PERFORM ROUTINE TASKS IN ENSURING THE WORKING ENVIRONMENT IS ORGANISED, CLEAN AND TIDY, ASSIST IN A WIDE VARIETY OF BASIC SERVICES, DELIVERY AND MAINTENANCE JOBS AS REQUIRED BY THE NEEDS OF THE ORGANISATION.

A General Worker (Agriculture) will be able to:

1. Perform variety of routine tasks to assist in production activities;
2. Keeps equipment and working area clean and orderly;
3. Separate product according to weight, grade, size, and composition of material used to produce product;
4. Adhere to all safety procedures; and
5. Assist in preparation of process materials.

Pre-requisite:

- i. Academic Qualification: Possess minimum SPM Certificate



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

PLANT TISSUE CULTURE ASSISTANT TECHNICIAN (AGRICULTURE)

AN PLANT TISSUE CULTURE ASSISTANT TECHNICIAN (AGRICULTURE) IS DESIGNATED TO ASSIST IN PLANT PROPAGATION, COMPILE DATA PERTAINING TO SIZE, NUMBER, CONTENT, CONDITION, AND OTHER CHARACTERISTICS OF CULTURED PLANT.

An Plant Tissue Culture Assistant Technician (Agriculture) will be able to:

1. Key in tissue culture production data into computer databases.
2. Conduct laboratory practices for medium preparation;
3. Perform tissue culture activities for production;
4. Conduct hardening practices for plants, pests, diseases and soils activities; and
5. Perform tissue culture laboratory equipment and green house maintenance.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in Biotechnology or related fields
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

PLANT TISSUE CULTURE TECHNICIAN (AGRICULTURE)

A PLANT TISSUE CULTURE TECHNICIAN (AGRICULTURE) IS DESIGNATED TO SUPERVISE TISSUE CULTURE PRODUCTION ACTIVITIES INCLUDING PURCHASING PLANTING MATERIALS, PLANT PROPAGATION, LABORATORY AND GREEN HOUSE INFRASTRUCTURE MAINTENANCE, CUSTOMER SUPPORT, WASTE TREATMENT AND DOWNSTREAM ACTIVITIES.

A Plant Tissue Culture Technician (Agriculture) will be able to:

1. Supervise ex-lab planting site preparation activities;
2. Purchase planting materials for tissue culture initiation;
3. Perform pest and disease control activities in green house;
4. Supervise laboratory infrastructure maintenance and inventory;
5. Conduct customer support activities;
6. Coordinate downstream activities; and
7. Record tissue culture production data.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in Biotechnology or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

PLANT PROPAGATOR SUPERVISOR (AGRICULTURE)

A PLANT PROPAGATOR SUPERVISOR (AGRICULTURE) IS DESIGNATED TO DIRECTLY SUPERVISE THE PROPAGATION ACTIVITIES. PROPAGATES PLANTS USING METHODS SUCH AS BUDDING, SEED PRODUCTION, CUTTING, GRAFTING, MACRO CUTTING, IN VITRO AND IN VIVO PROPAGATION AND HARDENING.

A Plant Propagator Supervisor (Agriculture) will be able to:

1. Supervise and scheduling propagations activities;
2. Propagate plants using methods such as budding, seed production, cutting, grafting, macro cutting, in vitro propagation, rootstock and rooting process in accordance with cultural practices;
3. Select material according to kind of plant; mixes growth media;
4. Inspect growing area to ascertain temperature and humidity conditions;
5. Regulate systems of heaters, fans, and sprayers to ensure conformance with specifications;
6. Carry out grafting or dividing of developing plants;
7. Adhere to safety and security procedure;
8. Follow propagation Standard Operating Procedure (SOP); and
9. Coordinate tissue culture data recording activities.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Biotechnology or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

PLANT TECHNOLOGIST (AGRICULTURE)

A PLANT TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE IN DEVELOPMENT AND PRODUCTION OF CLONES AND PLANT PROPAGATION.

A Plant Technologist (Agriculture) will be able to:

1. Plan propagation and tissue culture production to ensure clone quality;
2. Apply best practices in propagation and tissue culture production;
3. Review and analyse production quality of cultured plant;
4. Maintain and review all production record, data and reports;
5. Obtain customer feedback on cultured plant growth performance;
6. Provide technical advisory services to customer for planting of cultured plant;
7. Develop Standard Operating Procedure (SOP) for tissue culture production;
8. Ensure effective distribution of cultured plants; and
9. Maintain detail records throughout the production cycle.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Agriculture related fields
- ii. Experience: 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

NURSERY MANAGER (AGRICULTURE)

A NURSERY MANAGER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE IN MANAGING TISSUE CULTURE PRODUCTION SITE.

A Nursery Manager (Agriculture) will be able to:

1. Plan and manage tissue culture production site activities;
2. Review Standard Operating Procedure (SOP) for tissue culture production activities;
3. Prepare periodic operation and management report;
4. Prepare operational budget for management approval;
5. Prepare research report for customer;
6. Organise promotional activities to potential client; and
7. Ensure all personnel are adequately trained and certified.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree Biotechnology or related field
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

PLANT BREEDER (AGRICULTURE)

A PLANT BREEDER (AGRICULTURE) IS DESIGNATED TO APPLY A RANGE OF TECHNIQUES TO PRODUCE NEW AND IMPROVED VARIETIES OF PLANTS FOR TISSUE CULTURE PRODUCTION, ALLOWING IT TO INCREASE AND MAINTAIN YIELDS IN IMPORTANT CROPS GROWN FOR VARIOUS INDUSTRIES.

A Plant Breeder (Agriculture) will be able to:

1. Oversee the integration of new plant with other commercial areas, including brand development, sales strategy, quality, marketing and farming;
2. Provide professional and personal leadership to tissue culture production team;
3. Plan and formulate aspects of research and development for improvement in tissue culture production;
4. Oversee plant selection and screening activities for desirable traits;
5. Manage training and development programme for technical and field personnel;
6. Contribute ideas in scientific literature on new approaches in tissue culture technique to support plant breeding;
7. Respond to enquiries from farmers, agronomists and other professionals;
8. Write and present work to other scientists and publishing scientific findings; and
9. Manage and allocate operational budget.

Pre-requisite:

- i. Academic Qualification: Possess minimum Master Degree in Biotechnology or related fields
- ii. Experience: Minimum 10 years

ANNEX 6.2.6:

ReProduction

(Livestocks/Aqua and Marine)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

GENERAL WORKER (AGRICULTURE)

A GENERAL WORKER (AGRICULTURE) IS UNDER DIRECTION TO PERFORM ROUTINE TASKS IN ENSURING THE LIVESTOCKS REPRODUCTION ACTIVITIES ARE CARRIED OUT AS REQUIRED BY THE NEEDS OF THE ORGANISATION.

A General Worker (Agriculture) will be able to:

1. Clean cages, pens, trays, equipment and fittings;
2. Ensure livestock are fed, kept, cleaned and comfortable;
3. Perform variety of routine tasks in livestock reproduction activities;
4. Keeps livestock reproduction equipment and working area clean and tidy;
5. Segregate livestock according to standard reproduction requirement;
6. Adhere to all safety procedures; and
7. Assist in preparation of livestock reproduction process;

Pre-requisite:

- i. Academic Qualification: Possess minimum SPM Certificate



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

LIVESTOCKS HANDLER (AGRICULTURE)

A LIVESTOCKS HANDLER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR THE DAILY CARE OF LIVESTOCKS. HE/SHE WORKS IN A VARIETY OF DIFFERENT ENVIRONMENTS TO CARE FOR VARIOUS TYPES OF LIVESTOCKS.

A Livestock Handler (Agriculture) will be able to:

1. Provide all necessary care for their animals;
2. Observe and record data on animals that scientists experiment on;
3. Cleans animal cages and racks,
4. Maintain records to comply with regulatory requirements and standard operating procedures,
5. Perform preventive maintenance on facility equipment; and
6. Perform animal observation, grooming, and minor clinical tasks.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Not Necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

VETERINARY REPRODUCTION TECHNICIAN (AGRICULTURE)

A VETERINARY REPRODUCTION TECHNICIAN (AGRICULTURE) IS DESIGNATED TO PERFORM LIVESTOCK REPRODUCTION ACTIVITIES WHICH INCLUDES LIVESTOCKS PREPARATION, EQUIPMENT AND WORKING AREAS SETUP.

A Veterinary Reproduction Technician (Agriculture) will be able to:

1. Responsible for the operations and maintenance, troubleshooting and smooth running of operational equipments;
2. Prepare pens and materials for reproduction activities;
3. Check receiving and outgoing livestock;
4. Perform livestock tagging activities for identification purposes;
5. Apply medication as prescribed by Veterinarian;
6. Check and record reproduction parameters accordingly;
7. Maintain and upkeep livestock reproduction log book;
8. Ensure suitable/temperature humidity in closed/open house;
9. Inform immediate supervisor of deviation from optimum or normal operating conditions; and
10. Adhere to all safety and standard operating procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in Veterinary or related fields
- ii. Experience: Minimum 1 year



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

**VETERINARY REPRODUCTION ASSISTANT TECHNOLOGIST
(AGRICULTURE)**

A VETERINARY REPRODUCTION ASSISTANT TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO ASSIST LIVESTOCKS REPRODUCTION TEAM IN ALL ASPECTS OF REPRODUCTION ACTIVITIES.

A Veterinary Reproduction Assistant Technologist (Agriculture) will be able to:

1. Assist in coordinating all aspects of livestock reproduction activities as per Standard Operating Procedure;
2. Assist in Standard Operating Procedure (SOP) preparation;
3. Ensure availability of all reproduction activities equipment and facility;
4. Perform livestock analysis and preparation for effective and safe reproduction process;
5. Verify and analyse livestock tagging activities;
6. Assign and monitor medication administration as prescribed by Veterinarian;
7. Conform reproduction parameters accordingly;
8. Inform immediate supervisor of deviation from optimum or normal operating conditions;
9. Assist in coordinating of site equipments maintenance; and
10. Verify and maintain health of livestock;

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Veterinary or related field
- ii. Experience: minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

VETERINARY REPRODUCTION TECHNOLOGIST (AGRICULTURE)

A VETERINARY REPRODUCTION TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO ANALYSE MEASUREMENT, COMPARE MEASUREMENT WITH STANDARD FEED CONVERSION RATIO, ANALYSE FEED SAMPLE, ENSURE SUITABLE/TEMPERATURE HUMIDITY IN CLOSED/OPEN HOUSE, CONDUCT MANAGERIAL FUNCTIONS, PREPARE BIO SECURITY PROCEDURES AND DETERMINE DATES OF CULLING/SELLING.

A Veterinary Reproduction Technologist (Agriculture) will be able to:

1. Coordinate all aspects of livestock reproduction activities as per Standard Operating Procedure;
2. Prepare Standard Operating Procedure (SOP) for reproduction activities;
3. Determine requirement for reproduction machinery and equipment;
4. Review livestock analysis and preparation for effective and safe reproduction process
5. Administer medication and maintain health of livestock;
6. Perform systematic trials or investigation in critical areas to improve reproduction output;
7. Verify and conform reproduction parameters accordingly;
8. Inform immediate supervisor of deviation from optimum or normal operating conditions;
9. Analyse and comply with existing standard measurement;
10. Ensure suitable /temperature humidity in closed/open house; and
11. Determine dates of culling/selling.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Veterinary or related fields
- ii. Experience: minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

LIVESTOCKS REPRODUCTION MANAGER (AGRICULTURE)

A LIVESTOCKS REPRODUCTION MANAGER (AGRICULTURE) IS DESIGNATED TO PRIMARILY BE RESPONSIBLE FOR THE OVERALL SMOOTH OPERATION OF THE REPRODUCTION ACTIVITIES.

A Livestock Reproduction Manager (Agriculture) will be able to:

1. Develop breeding plan strategy to identify and purchase herd replacement;
2. Review research plan and implement protocol to determine long term reproductive project;
3. Ensure all Standard Operating Procedures and safety standards are fully complied with;
4. Ensure reproduction costs are within budgetary targets;
5. Coordinate with other managers especially Maintenance, Quality Assurance, and higher management departments;
6. Continuously look into the improvement and operation;
7. Regularly conduct preventive maintenance activities;
8. Conduct operation meeting for business excellences; and
9. Ensure all personnel are adequately trained and certified.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Aqua and Marine or related fields;
- ii. Experience: Minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

GENERAL WORKER (AGRICULTURE)

A GENERAL WORKER (AGRICULTURE) IS UNDER DIRECTION TO PERFORM ROUTINE TASKS IN ENSURING THE WORKING ENVIRONMENT IS ORGANISED, CLEAN AND TIDY, ASSIST IN A WIDE VARIETY OF BASIC SERVICES, DELIVERY AND MAINTENANCE JOBS AS REQUIRED BY THE NEEDS OF THE ORGANISATION.

A General Worker (Agriculture) will be able to:

1. Clean holding tanks, ponds, aqua and marine equipment and fittings;
2. Perform variety of routine tasks to assist in production activities;
3. Keep equipment and working area clean and orderly;
4. Segregate aqua and marine livestock according to weight, grade, size, and health;
5. Adhere to all safety procedures; and
6. Assist in preparation of process materials.

Pre-requisite:

- i. Academic Qualification: Possess minimum SPM Certificate



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

AQUA AND MARINE HANDLER (AGRICULTURE)

AN AQUA AND MARINE HANDLER (AGRICULTURE) IS RESPONSIBLE FOR THE DAILY CARE OF AQUACULTURE AND MARINE AT DIFFERENT AQUA AND MARINE LIVESTOCKS BREEDING ENVIRONMENT.

An Aqua and Marine Handler (Agriculture) will be able to:

1. Ensure recirculating aquaculture system;
2. Observe and record data on aqua & marine livestock reproduction;
3. Cleans aqua and marine ponds and surrounding area;
4. Handle basic aqua and marine equipment including boat; and
5. Perform aqua and marine observation and minor clinical tasks.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 1 year



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

AQUA AND MARINE REPRODUCTION TECHNICIAN (AGRICULTURE)

AN AQUA AND MARINE REPRODUCTION TECHNICIAN (AGRICULTURE) IS DESIGNATED TO PERFORM ACTIVITIES SUCH AS CHECKING AND RECORDING PROCESS CONDITIONS OR PARAMETERS IN A BIOPROCESSING. HE/SHE MAY CARRY OUT CERTAIN FUNCTIONS TO ENSURE THE SMOOTH OPERATION UNDER SUPERVISION.

An Aqua and Marine Reproduction Technician (Agriculture) will be able to:

1. Responsible for the operations and maintenance, troubleshooting and smooth running of operational equipments;
2. Prepare holding tank and harvesting ponds for reproduction activities;
3. Monitor water recirculating system;
4. Check receiving and outgoing aqua and marine livestock;
5. Perform aqua and marine livestock's ponds tagging activities for identification purposes;
6. Apply medication as prescribed by aqua and marine biologist;
7. Check and record aqua and marine livestock reproduction parameters accordingly;
8. Maintain and upkeep aqua and marine livestock reproduction log book;
9. Inform immediate supervisor of deviation from optimum operating conditions; and
10. Adhere to all safety and standard operating procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in Aquamarine or related fields
- ii. Experience: Minimum 1 year



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

AQUA AND MARINE REPRODUCTION

ASSISTANT TECHNOLOGIST (AGRICULTURE)

AN AQUA AND MARINE REPRODUCTION ASSISTANT TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO ASSIST REPRODUCTION TEAM IN REPRODUCTION ACTIVITIES.

An Aqua and Marine Reproduction Assistant Technologist (Agriculture) will be able to:

1. Assist in coordinating all aspects of aqua and marine livestock reproduction activities as per Standard Operating Procedure;
2. Assist in Standard Operating Procedure (SOP) preparation;
3. Ensure availability of all reproduction activities equipment and facility;
4. Perform aqua and marine livestock analysis and preparation for effective and safe reproduction process;
5. Verify and analyze aqua and marine livestock' ponds tagging activities;
6. Assign and monitor medication administration as prescribed by aqua and marine Biologist;
7. Conform aqua and marine livestock' reproduction parameters accordingly;
8. Inform immediate supervisor of deviation from optimum or normal operating conditions;
9. Assist in coordinating of site equipments maintenance; and
10. Verify and maintain health of aqua and marine livestock.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in aqua and marine or related field
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

AQUA AND MARINE REPRODUCTION TECHNOLOGIST (AGRICULTURE)

AN AQUA AND MARINE REPRODUCTION TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO ANALYSE COORDINATE ACTIVITIES IN AQUA AND MARINE FARM OPERATION AND MAINTENANCE.

An Aqua and Marine Reproduction Technologist (Agriculture) will be able to:

1. Coordinate all aspects of aqua and marine livestock reproduction activities as per Standard Operating Procedure;
2. Prepare Standard Operating Procedure (SOP) for reproduction activities;
3. Determine requirement for reproduction machinery, equipment and facility;
4. Review aqua and marine livestock analysis and preparation for effective and safe reproduction and harvesting process;
5. Administer medication and maintain health of aqua and marine livestock;
6. Perform systematic trials or investigation in critical areas to improve aqua and marine reproduction harvest;
7. Verify and conform aqua and marine livestock reproduction parameters accordingly; and
8. Inform immediate supervisor of deviation from optimum operating conditions;

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Veterinary or related fields
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

AQUA AND MARINE REPRODUCTION MANAGER (AGRICULTURE)

AN AQUA AND MARINE REPRODUCTION MANAGER (AGRICULTURE) IS DESIGNATED TO PRIMARILY BE RESPONSIBLE FOR THE OVERALL SMOOTH OPERATION OF THE AQUA AND MARINE FARM.

An Aqua and Marine Reproduction Manager (Agriculture) will be able to:

1. Develop breeding plan strategy to identify and purchase aqua and marine livestock replacement;
2. Review research plan and implement protocol to determine long term reproductive project;
3. Ensure all Standard Operating Procedures and safety standards are fully complied with;
4. Ensure reproduction costs are within budgetary targets;
5. Coordinate with other managers especially Maintenance, Quality Assurance, and higher management departments;
6. Continuously look into the improvement and operation;
7. Regularly conduct preventive maintenance activities;
8. Conduct operation meeting for business excellences; and
9. Ensure all personnel are adequately trained and certified.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Veterinary or related fields
- ii. Experience: minimum 10 years

ANNEX 6.3:

SALES AND MARKETING DIVISION

ANNEX 6.3.1:

Sales and Marketing (Customer Service)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

CUSTOMER SERVICE ASSISTANT (AGRICULTURE)

A CUSTOMER SERVICE ASSISTANT (AGRICULTURE) PROVIDES CLERICAL DUTIES FOR CUSTOMER SERVICE OR SALES REPRESENTATIVES. CUSTOMER SERVICE ASSISTANTS FILE INVOICES, TYPE REPORTS, MANAGE PHONE CALLS, HANDLE CUSTOMER INQUIRIES AND RESPOND TO EMAIL. SOMETIMES, THE ASSISTANT MIGHT GREET CLIENTS, SCHEDULE APPOINTMENTS, HELP MAKE A SALE, OR PERHAPS FOLLOW UP WITH CUSTOMERS TO MAKE SURE THE PRODUCT OR SERVICE SOLD HAD BEEN DELIVERED AS PROMISED.

A Customer Service Assistant (Agriculture) will be able to:

1. Respond to telephone, mail and face-to-face inquires about the company's products or services following standard procedures;
2. Document details of telephone conversation and actions taken;
3. Complete transactions, records of complaints and actions taken, comments using office software;
4. Field all inquires regarding product, delivery and general services related to customer;
5. Provide for smooth transitions by the coordinating work, schedule and daily processes for optimal efficiency and effectively; and
6. Assist customer to correctly identify issues and determine appropriate priority levels for the executive's response.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

CUSTOMER SERVICE EXECUTIVE (AGRICULTURE)

A CUSTOMER SERVICE EXECUTIVE (AGRICULTURE) IS DESIGNATED TO MANAGE THE INITIAL ENQUIRIES ON PRODUCT AND SERVICES, PROVIDE ADMINISTRATIVE AND DATABASE MANAGEMENT FOR CUSTOMER SERVICE FUNCTIONS.

A Customer Service Executive (Agriculture) will be able to:

1. Support pre and post-sales activities, coordination, account management and relationship building;
2. Explore, identify and develop new opportunities and developing marketing strategies with action plans to penetrate new market segments;
3. Prepare of service quotations and following up of sales enquiries;
4. Build and maintain effective relationship with customers to increase customer satisfaction and advocacy;
5. Identify issues and provide solution to customers;
6. Assist in selection, training, motivating and evaluating assigned personnel;
7. Provide or coordinates staff training; and
8. Coach employees to correct deficiencies, implements discipline and termination procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum Advance Diploma or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

CUSTOMER SERVICE MANAGER (AGRICULTURE)

A CUSTOMER SERVICE MANAGER (AGRICULTURE) IS DESIGNATED TO MANAGE CUSTOMER SERVICE MANAGEMENT, WORKING CLOSELY WITH THE SUPPLY CHAIN AND FACILITATE INTERNAL AND EXTERNAL COMMUNICATION FOR CUSTOMER SERVICE.

A Customer Service Manager (Agriculture) will be able to:

1. Assume full management responsibility for all departmental services and activities including administration of all customer services functions, recommend and administer policies and procedures;
1. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
2. Establish and appropriate service and staffing levels, monitor and evaluate the efficiency and effectiveness of service delivery methods and procedures; allocates resource accordingly;
3. Plan, direct and coordinate, through subordinate level staff, the customer service Department's work plan, assign projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meet with key staff to identify and resolve problems;
4. Assess and monitor work load, administrative and support systems, and internal reporting relationships, identify opportunities for improvement, direct and implement changes; and
5. Oversee staff and activities of customer service facilities including the Customer Service Center, and Customer Complaint Center, ensure all operations are conducted in accordance with policy and guidelines.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SALES AND MARKETING DIRECTOR (AGRICULTURE)

A SALES AND MARKETING DIRECTOR (AGRICULTURE) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A Sales and Marketing Director (Agriculture) will be able to:

1. Direct and coordinate company sales and marketing functions.
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyse and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisites:

- i. Academic Qualification: Possess minimum Master Degree in related field
- ii. Experience: Minimum 10 years

ANNEX 6.3.2:

Sales and Marketing (Technical Service)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

TECHNICAL SERVICE ASSISTANT (AGRICULTURE)

A TECHNICAL SERVICE ASSISTANT (AGRICULTURE) PROVIDES CLERICAL DUTIES FOR TECHNICAL SERVICE OR SALES REPRESENTATIVES. TECHNICAL SERVICE ASSISTANTS TYPE REPORTS, MANAGE PHONE CALLS, HANDLE TECHNICAL INQUIRIES AND RESPOND TO EMAIL. SOMETIMES, THE ASSISTANT MIGHT GREET CLIENTS, SCHEDULE APPOINTMENTS, HELP MAKE A SALE, OR PERHAPS FOLLOW UP WITH CUSTOMERS TO MAKE SURE THE PRODUCT OR SERVICE SOLD HAD BEEN DELIVERED AS PROMISED.

A Technical Service Assistant (Agriculture) will be able to:

1. Respond to telephone, mail and face-to-face inquires about the company's products or services following standard procedures;
2. Document details of telephone conversation and actions taken;
3. Complete transactions, records of complaints and actions taken, comments using office software;
4. Field all inquires regarding product, delivery and general services related to customer;
5. Provide for smooth transitions by the coordinating work, schedule and daily processes for optimal efficiency and effectively; and
6. Assist customer to correctly identify issues and determine appropriate priority levels for the executive's response.

Pre-requisite:

- i. Academic Qualification: Possess minimum Technical Certificate in related field
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

TECHNICAL SERVICE EXECUTIVE (AGRICULTURE)

A TECHNICAL SERVICE EXECUTIVE (AGRICULTURE) IS DESIGNATED TO RESPONSIBLE FOR HANDLING THE TECHNICAL SUPPORT FOR NEW OR EXISTING CLIENTS. TECHNICAL EXECUTIVE HAS TO COLLABORATE WITH OTHER TEAMS REGARDING ANY PRODUCT OR SERVICE TECHNICAL ISSUES.

A Technical Service Executive (Agriculture) will be able to:

1. Handle customer technical queries and complaint;
2. Perform research and analysis in order to resolve customer issues;
3. Provide technical support in the installation, application, commissioning and after sales trouble shooting related to product or services to customers;
4. Confer with other departments, supplier or vendors in identifying, analysing and resolving customer issues;
5. Provide technical training presentation and seminar on product safe application at customer's location;
6. Utilise all available tools such as service report, manual, customer feedback and relevant database to improve product or service quality; and
7. Develop and maintain highest level of technical knowledge and networking.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

TECHNICAL SERVICE MANAGER (AGRICULTURE)

A TECHNICAL SERVICE MANAGER (AGRICULTURE) IS DESIGNATED TO PROVIDE TECHNICAL DIRECTION FOR THE DEVELOPMENT, DESIGN, AND SYSTEMS INTEGRATION FOR CLIENT ENGAGEMENT FROM DEFINITION PHASE THROUGH IMPLEMENTATION. HE/SHE MAY APPLY SIGNIFICANT KNOWLEDGE OF INDUSTRY TRENDS AND DEVELOPMENTS TO IMPROVE SERVICE TO OUR CLIENTS AND REVIEWS WORK OF DEVELOPMENT TEAM.

A Technical Service Manager (Agriculture) will be able to:

1. Responsible for all departmental services and activities including administration of all technical services functions, recommend and administer policies and procedures;
2. . Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
3. Establish and appropriate service and staffing levels, monitor and evaluate the efficiency and effectiveness of service delivery methods and procedures, allocate resources accordingly;
4. . Plan, direct and coordinate, through subordinate level staff, the customer service Department's work plan, assigns projects and programmatic areas of responsibility, reviews and evaluates work methods and procedures, meets with key staff to identify and resolve problems;
5. Manage technical support in the installation, application, commissioning and after sales trouble shooting related to product or services to customers;
6. Provide counsel and advice to other departments, supplier or vendors in identifying, analysing and resolving customer issues;
7. Organise technical training presentation and seminar on product safe application at customer's location; and
8. Develop and maintain highest level of technical knowledge, customer relation and networking.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SALES AND MARKETING DIRECTOR (AGRICULTURE)

A SALES AND MARKETING DIRECTOR (AGRICULTURE) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A Sales and Marketing Director (Agriculture) will be able to:

1. Direct and coordinate company sales and marketing functions;
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyse and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisites:

- i. Academic Qualification: Possess minimum Master Degree in related field
- ii. Experience: Minimum 10 years

ANNEX 6.3.3:

Sales and Marketing (Marketing)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

MARKETING ASSISTANT (AGRICULTURE)

A MARKETING ASSISTANT (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR SUPPORTING THE DEVELOPMENT AND EXECUTION OF THE MARKETING PLAN AND RESEARCH MARKET CONDITIONS IN LOCAL, REGIONAL, OR NATIONAL AREAS TO DETERMINE POTENTIAL SALES OF A PRODUCT OR SERVICE.

A Marketing Assistant (Agriculture) will be able to:

1. Collate and tabulate market research and conditions in local, regional, or national area for potential sales of product or service analysis;
2. Assist on marketing activities and ensuring the proper use of logos and brand as per guidelines;
3. Establish and maintain a centralised archive of presentations, marketing materials and communications that is accessible to various functional groups internally;
4. Assist in financial responsibilities: estimating, billing, reporting and invoicing for marketing fees and expenses, cooperative advertising requests and documentation;
5. Create and distribute rollout communications for program updates, product enhancements, direct marketing programs and sales tools; and
6. Maintain and update marketing plan flowchart.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

MARKETING EXECUTIVE (AGRICULTURE)

A MARKETING EXECUTIVE (AGRICULTURE) IS DESIGNATED TO INVOLVE IN DEVELOPING MARKETING CAMPAIGNS THAT PROMOTE A PRODUCT, SERVICE OR IDEA. THE ROLE INCLUDES PLANNING, ADVERTISING, PUBLIC RELATIONS, ORGANISING EVENTS, PRODUCT DEVELOPMENT, DISTRIBUTION, SPONSORSHIP AND RESEARCH.

A Marketing Executive (Agriculture) will be able to:

1. Create marketing plans geared toward end users for each key product within portfolio, in line with strategy and targets and within budget.
2. Examine and analyses statistical data to forecast future marketing trends and to identify potential markets.
3. Work with the business innovations department to develop new ideas for reaching customer's markets.
4. Communicate to the rest of marketing team about new innovations and how they can be used to leverage marketing efforts.
5. Assist the manager in managing the product or service branding, communication and promotion; and
6. Assist the manager in managing the company's product or service communicated through media channels.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Marketing
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

MARKETING MANAGER (AGRICULTURE)

A MARKETING MANAGER (AGRICULTURE) IS DESIGNATED TO PLAN, DIRECT, AND COORDINATE ACTIVITIES TO DETERMINE THE DEMAND FOR PRODUCTS AND SERVICES OFFERED AND IDENTIFY POTENTIAL CUSTOMERS. DEVELOP MARKETING AND DISTRIBUTION STRATEGIES WITH THE GOAL OF MAXIMISING PROFITS OR SHARE OF THE MARKET WHILE ENSURING CUSTOMERS ARE SATISFIED. MONITOR TRENDS THAT INDICATE THE NEED FOR NEW PRODUCTS AND SERVICES.

A Marketing Manager (Agriculture) will be able to:

1. Develop marketing strategy, based on knowledge of establishment policy, nature or market, and cost and markup factors;
2. Establish research methodology and designs format for data gathering, such as surveys, opinion polls, or questionnaires;
3. Analyses business developments and consults trade journals to monitor market trends and determine market opportunities for products;
4. Coordinates promotional activities and trade exhibition to market products and services;
5. Plan, direct and coordinate, through subordinate level staff, the customer service department's work plan, assign projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meet with key staff to identify and resolve problems;
6. Confer with legal staff to resolve problems, such as copyright infringement and royalty sharing with outside producers and distributors;
7. Prepare report of marketing activities; and
8. Assist Sales and Marketing Director in the development and implementation of marketing plans for products.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Marketing
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SALES & MARKETING DIRECTOR (AGRICULTURE)

A SALES MARKETING DIRECTOR (AGRICULTURE) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A Sales and Marketing Director (Agriculture) will be able to:

1. Direct and coordinate company sales and marketing functions.
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyse and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisites:

- i. Academic Qualification: Possess minimum Master Degree in related field
- ii. Experience: Minimum 10 years

ANNEX 6.3.4:

Sales and Marketing (Sales)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

SALES ASSISTANT (AGRICULTURE)

A SALE ASSISTANT (AGRICULTURE) IS DESIGNATED TO PERFORM ACTIVITIES ASSOCIATED WITH SELLING, STOCKING AND ORDERING PRODUCT OR SERVICES IN A RETAIL OR SALES OPERATION.

A Sales Assistant (Agriculture) will be able to:

1. Assist in responding to customer's queries and complaint on product or services;
2. Assist to prepare bidding document, proposal and costing;
3. Check inventory periodically to obtain stock information;
4. Collate and tabulate sales performance through invoices, sales prospect, and sales plan;
5. Provide sales administration duties such as issuance of credit/debit note, invoices, sales order and correspondence; and
6. Maintain cordial connection to customer's representative to maintain sales and receive payment collection.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

SALES EXECUTIVE (AGRICULTURE)

A SALES EXECUTIVE (AGRICULTURE) IS DESIGNATED TO SELL PRODUCTS AND SERVICES TO NEW AND EXISTING CUSTOMERS. THEY ARE ALSO INVOLVED IN IDENTIFYING NEW MARKETS AND BUSINESS OPPORTUNITIES.

A Sales Executive (Agriculture) will be able to:

1. Implement sale strategies for products and services;
2. Build goodwill and strong relationship with customer by maintaining regular visits and contact;
3. Prepare quotation and follow up with customer to secure order and advice customer on selection of product or service;
4. Responsible for customer's satisfaction level and customer's audit;
5. Deliver presentations of products at customer sites and at conferences and exhibitions;
6. Maintain contact with existing and potential customers to promote sales and deliver detailed account plans; and
7. Observe customer feedback and complaint on product quality and delivery.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Sales and Marketing or related field
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

SALES MANAGER (AGRICULTURE)

A SALES MANAGER (AGRICULTURE) IS DESIGNATED TO PLAN, DIRECT, AND COORDINATE SALES ACTIVITIES BY ESTABLISHING SALES TERRITORIES, QUOTAS, GOALS, AND TRAINING PROGRAMS FOR SALES REPRESENTATIVES. ANALYSE SALES STATISTICS TO DETERMINE SALES POTENTIAL, INVENTORY REQUIREMENTS AND CUSTOMER PREFERENCES.

A Sales Manager (Agriculture) will be able to:

2. Responsible for all departmental services and activities including administration of all customer services functions, recommends and administers policies and procedures.
6. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area.
3. Plan, direct and coordinate, through subordinate level staff, the customer service department's work plan, assign projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meet with key staff to identify and resolve problems.
4. Plan and priorities sales activities and customer/prospect contact towards achieving targeted business plan.
5. Manage business portfolio, product, services and sales territory according to market strategy, pricing, margin and profit target.
6. Monitor and report on market and competitor's activities and provide relevant report and market information; and
7. Manage collection of outstanding debts according to agreed credit terms.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Sales and Marketing or related field
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SALES & MARKETING DIRECTOR (AGRICULTURE)

A SALES MARKETING DIRECTOR (AGRICULTURE) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A Sales and Marketing Director (Agriculture) will be able to:

1. Direct and coordinate company sales and marketing functions.
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyse and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisite:

- i. Academic Qualification: Possess minimum Master Degree in Sales and Marketing or related field
- ii. Experience: Minimum 10 years

ANNEX 6.4:

LOGISTICS AND WAREHOUSING DIVISION

ANNEX 6.4.1:

Logistics and Warehousing (Logistic)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

STORE HANDLER (AGRICULTURE)

A STORE HANDLER (AGRICULTURE) IS DESIGNATED TO RECEIVE, STORE, HANDLE AND DELIVER MATERIALS, EQUIPMENT AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Store Handler (Agriculture) will be able to:

1. Receive, count, deliver and store materials and equipments to designated area, and determines sequence and release of back orders according to stock availability;
2. Record nature, quantity, value, or location of material, supplies, or equipment received, shipped, used, or issued to workers;
3. Clean and maintain supplies, tools, equipments and instruments and storage areas to ensure compliance to safety regulations;
4. Apply labels or stickers to finished goods for distribution or export; and
5. Check specifications prior to delivery and receiving materials and equipments.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM Certificate equivalent
- ii. Basic command in English and Malay Language



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

FORKLIFT DRIVER (AGRICULTURE)

FORKLIFT DRIVERS (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE OF IN MOVING MATERIALS OR EQUIPMENT TO MEET JOB ORDER.

A Forklift Driver (Agriculture) will be able to:

1. Perform stuffing and unstuffing from truck or containers;
2. Transport material and equipment for storage purpose;
3. Inspect forklift regularly According to the Occupational Safety and Health;
4. Stack, arrange and retrieve material or equipment at storage area; and
5. Prepare pallets or materials to put on trucks or containers for delivery based on order form.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Not necessary
- iii. Possess valid driving licenses for forklift operation



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

STOREKEEPER (AGRICULTURE)

A STOREKEEPER (AGRICULTURE) IS DESIGNATED TO COORDINATE ACTIVITIES INVOLVED IN RECEIVING, STORAGE, AND ISSUE MATERIALS, EQUIPMENT, AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Storekeeper (Agriculture) will be able to:

1. Prepare periodic, special, or perpetual inventory of stock;
2. Maintain the storage area according to Standard Operation Procedure (SOP);
3. Receive and inspects all incoming materials and reconciles with delivery order (DO);
4. Supervise and organise his/her subordinate based on their work order;
5. Maintain, update and key in inventories, loading and unloading into material requirement planning system; and
6. Compare records with sales orders, invoices, or requisitions to verify accuracy and receipt of items.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

LOGISTIC ASSISTANT (AGRICULTURE)

A LOGISTIC ASSISTANT (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE IN PREPARING DOCUMENTATION AND ADMINISTRATIVE FUNCTION FOR SHIPPING AND CUSTOM CLEARANCE.

A Logistic Assistant (Agriculture) will be able to:

1. Prepare shipping documentation such as packing details, invoices and bar coding;
2. Prepare documentation for custom clearance relating to import or export of good or equipment;
3. To coordinate with personnel from warehouse logistic provider and shipping agents to ensure on time delivery;
4. Prepare shipment documentation to ensure all shipment arrived and delivered in timely manner;
5. Carry out supporting activities in all level of time management for shipping activities in order to ensure smooth transition;
6. Handle all customers' needs for transportation order, quotation and any project cargo requirements and specification;
7. Respond to custom exemption application and renewal of licenses;
8. Interact with suppliers in customers regarding shipping problems or enquiries; and
9. Handle import/export shipment, custom clearance and provide logistic support.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Logistics
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

LOGISTIC EXECUTIVE (AGRICULTURE)

A LOGISTIC EXECUTIVE (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE IN PLANNING, COORDINATING, IMPLEMENTING AND MANAGING ON LOGISTIC AND TRANSPORTATION ACTIVITIES.

A Logistics Executive (Agriculture) will be able to:

1. Monitor and manage vendor performance to ensure all shipments arrive and delivered in timely manner;
2. Closely monitor on monthly closing and billing process;
3. Monitor all customers' needs for transportation order, quotation and any project cargo requirement and specification;
4. Prepare reports for monthly management analysis;
5. Ensure continuous improvement for system to increase efficiency and effectiveness of operation; and
6. Monitor supplier and rate their performance.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Logistics
- ii. Basic Command in English and Malay Language
- iii. Proficient in Office software
- iv. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

LOGISTIC MANAGER (AGRICULTURE)

A LOGISTIC MANAGER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR THE MANAGEMENT OF LOGISTICS SERVICE BY PROVIDING LEADERSHIP, FOCUSING ON CUSTOMER REQUIREMENTS, EFFECTIVE OPERATIONAL PERFORMANCE AND A MOTIVATED WORKFORCE.

A Logistic Manager (Agriculture) will be able to:

1. To maximise performance of the logistics service by providing leadership, focusing on customer requirements, effective operational performance and a motivated workforce;
2. Support the profitable growth of the business through efficient management of logistics service achieving customer satisfaction;
3. Liaise with customers, customer service and sales staff to understand customer logistics requirements through analysis of performance, customer feedback and complaint;
4. Adhere to the transportation and customs requirements of country, regional and company's corporate policy directives at all times;
5. Develop and carry-out training programs that support the development of personnel of logistics;
6. Monitor logistics cost and expenditure to ensure costs efficiency in operations management;
7. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
8. Establish an appropriate service and staffing levels, monitor and evaluate the efficiency and effectiveness of service delivery methods and procedures, allocate resources accordingly; and
9. Plan, direct and coordinate, through subordinate level staff, the Warehouse Department's work plan, assigns projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meet with key staff to identify and resolve problems.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Logistic
- ii. Experience: Minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SUPPLY CHAIN DIRECTOR (AGRICULTURE)

A SUPPLY CHAIN DIRECTOR (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR THE DEVELOPMENT AND IMPLEMENTATION OF SUPPLY CHAIN STRATEGIES TO MEET BUSINESS TARGET.

A Supply Chain Director (Agriculture) will be able to:

1. Lead Logistics, Warehousing and purchasing functions of the organization;
2. Train Supply Chain personnel on Strategic Sourcing and delivery processes to ensure compliance;
3. Ensure that all necessary purchasing parameters (vendor data, contracts) are given and stored properly and take appropriate actions whenever necessary;
4. Prepare analysis and statistics to control and support the strategy for sourcing and delivery strategy and the strategic planning;
5. Ensure the availability of up to date supply market information;
6. Ensure the establishment of a competitive supply chain which provides sustainable reductions of total cost and integrates seamless into the purchasing and production (assembly) processes;
7. Search, select and qualify preferred suppliers to support the business requirements.
8. Proactive improvement of the quality along the entire supply chain; and
9. Creating and maintaining global contract system, create and execute competence development plans.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 10 years

ANNEX 6.4.2:

Logistics and Warehousing (Warehouse)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

STORE HANDLER (AGRICULTURE)

A STORE HANDLER (AGRICULTURE) IS DESIGNATED TO RECEIVE, STORE, HANDLE AND DELIVER MATERIALS, EQUIPMENT AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Store Handler (Agriculture) will be able to:

1. Receive, count, deliver and store materials and equipments to designated area, and determine sequence and release of back orders according to stock availability;
2. Record nature, quantity, value, or location of material, supplies, or equipment received, shipped, used, or issued to workers;
3. Clean and maintain supplies, tools, equipments and instruments and storage areas to ensure compliance to safety regulations;
4. Apply labels or stickers to finished goods for distribution or export; and
5. Check specifications prior to delivery and receiving materials and equipments.

Pre-requisite:

- i. Academic Qualification: Possess minimum SPM Certificate equivalent



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

FORKLIFT DRIVER (AGRICULTURE)

FORKLIFT DRIVERS (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR IN MOVING MATERIALS OR EQUIPMENT TO MEET JOB ORDER.

A Forklift Driver (Agriculture) will be able to:

1. Perform stuffing and unstuffing from truck or containers;
2. Transport material and equipment for storage purpose;
3. Inspect forklift regularly according to the Occupational Safety and Health;
4. Stack, arrange and retrieve material or equipment at storage area; and
5. Prepare pallets or materials to put on trucks or containers for delivery based on order form.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Not Necessary
- iii. Possess valid driving licenses for forklift operation.



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

STOREKEEPER (AGRICULTURE)

A STOREKEEPER (AGRICULTURE) IS DESIGNATED TO COORDINATE ACTIVITIES INVOLVED IN RECEIVING, STORAGE, AND ISSUE MATERIALS, EQUIPMENT, AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Storekeeper (Agriculture) will be able to:

1. Prepare periodic, special, or perpetual inventory of stock;
2. Maintain the storage area according to Standard Operation Procedure (SOP);
3. Receive and inspect all incoming materials and reconciles with delivery order (DO);
4. Supervise and organise his/her subordinate based on their work order;
5. Maintain, update and key in inventories, loading and unloading into material requirement planning system; and
6. Compare records with sales orders, invoices, or requisitions to verify accuracy and receipt of items.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

WAREHOUSE SUPERVISOR (AGRICULTURE)

A WAREHOUSE SUPERVISOR (AGRICULTURE) IS DESIGNATED TO SUPERVISE AND COORDINATE ACTIVITIES OF WORKERS ENGAGED IN RECEIVING, TRANSPORTING, STACKING, ORDER FILLING, SHIPPING, AND MAINTAINING STOCK RECORDS IN WAREHOUSE.

A Warehouse Supervisor (Agriculture) will be able to:

1. Supervise and coordinate activities of workers engaged in receiving, transporting, stacking, order filling, shipping, and maintaining stock records in warehouse;
2. Complete warehouse operational requirements by scheduling and assigning employees, following up on work results;
3. Control inventory levels by reviewing data recorded in tracking system, retrieving data, designing reports and directing corrective actions occur to manage the inventory levels;
4. Maintain professional and technical knowledge of staff by consulting with workers, managers and suppliers to ensure the procedures are maintained;
5. Maintain historical record keeping by tracing historical records of items to determine reasons for discrepancies between inventory and stock control records; and
6. Provide support to departmental staff by researching and resolving discrepancies, recommending remedial actions to manage inventory levels, and disbursement of inventory.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

WAREHOUSE EXECUTIVE (AGRICULTURE)

A WAREHOUSE EXECUTIVE (AGRICULTURE) IS DESIGNATED TO ASSIST THE WAREHOUSE MANAGER IN OVERSEING THE DAILY OPERATION OF THE WAREHOUSE, INCOMING, STORAGE AND OUTGOING ACTIVITES BY ADHERING TO FIRST IN FIRST OUT (FIFO) PRINCIPLE.

A Warehouse Executive (Agriculture) will be able to:

1. Assist in the management of raw materials inventory; finished goods, production material movement on time and accurately;
2. Plan, monitor and manage the inventory of stock item include store layout and inventory control;
3. Ensure proper arrangement and storage of inventory stock through Good Storage Practice (GSP);
4. Implement store procedures control system to ensure smooth flow of materials;
5. Analyse and solve problems on stock discrepancies;
6. Improve on warehouse operation effectiveness and efficiency;
7. Co-ordinate warehouse activities by overseeing receiving, storage, picking and packing;
8. Ensure shipments of correct orders and quantities reach destination in timely manner;
9. Ensure all warehouse facilities, equipments are properly maintained and comply with safety requirement; and
10. Responsible for conducting stock checks, variance investigation and reconciliations.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Logistic or related field
- ii. Experience: minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

WAREHOUSE MANAGER (AGRICULTURE)

A WAREHOUSE MANAGER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR THE EFFICIENT OPERATION AND CONTINUES IMPROVEMENT OF THE WAREHOUSING AND DISTRIBUTION OPERATION TO MEET BUSINESS REQUIREMENT.

A Warehouse Manager (Agriculture) will be able to:

1. Plan, develop, organise and deploy resources to optimise warehousing and distribution activities;
2. Ensure stock accuracy and credibility by conducting regular stock check;
3. Ensure the availability of all documents pertaining to movement of raw material to finish product and the consumption throughout the operation;
4. Ensure proper arrangement and storage of inventory stock through Good Storage Practice (GSP);
5. Ensure compliance of good housekeeping and safety standard;
6. Analysing data to monitor performance and plan improvement;
7. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
8. Establish and appropriate service and staffing levels, monitor and evaluate the efficiency and effectiveness of service delivery methods and procedures, allocate resources accordingly;
9. Plan, direct and coordinate, through subordinate level staff of Warehouse Department's;
10. Review and evaluate work methods and procedures; and
11. Meet with key staff to identify and resolve problems.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Logistic or related field
- ii. Experience: Minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SUPPLY CHAIN DIRECTOR (AGRICULTURE)

A SUPPLY CHAIN DIRECTOR (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR THE DEVELOPMENT AND IMPLEMENTATION OF SUPPLY CHAIN STRATEGIES TO MEET BUSINESS TARGET.

A Supply Chain Director (Agriculture) will be able to:

1. Lead Logistics, Warehousing and purchasing functions of the organisation;
2. Train Supply Chain personnel on Strategic Sourcing and delivery processes to ensure compliance;
3. Ensure that all necessary purchasing parameters (vendor data, contracts) are given and stored properly and take appropriate actions whenever necessary;
4. Prepare analysis and statistics to control and support the strategy for sourcing and delivery strategy and the strategic planning;
5. Ensure the availability of up to date supply market information;
6. Ensure the establishment of a competitive supply chain which provides sustainable reductions of total cost and integrates seamless into the purchasing and production (assembly) processes;
7. Search, select and qualify preferred suppliers to support the business requirements;
8. Proactive improvement of the quality along the entire supply chain; and
9. Creating and maintaining global contract system, create and execute competence development plans.

Pre-requisite:

- i. Academic Qualification: Possess minimum Degree in Logistic or related field
- ii. Experience: Minimum 10 years

ANNEX 6.5:

QUALITY ASSURANCE/ QUALITY CONTROL/ QUALITY MANAGEMENT (QA/QC/QM) DIVISION

ANNEX 6.5.1:

QA/QC/QM

(Quality Assurance)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

QUALITY ASSURANCE ASSISTANT (AGRICULTURE)

A QUALITY ASSURANCE ASSISTANT (AGRICULTURE) IS DESIGNATED TO PERFORM RESPONSIBLE FOR THE QUALITY TESTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING AS PER SPECIFICATION AND PARAMETERS RELATED TO THE REVIEW AND APPROVAL OF PRODUCTS OR MATERIAL IN STRICT ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, CURRENT GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES, AND REGULATORY REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance Assistant (Agriculture) will be able to:

1. Carry-out daily Quality Assurance testing for in-coming, in-process and finished goods as per specification and parameters;
2. Record all test and analysis using written log or specific programme and software;
3. Ensure all test, monitoring and measuring equipment are in good condition and calibrated;
4. Assist in conducting audit for process or quality management system;
5. Analyse product quality defect through investigation, test and trial; and
6. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre-requisites:

- i. Qualification : Minimum Diploma in related field
- ii. Experience : Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

QUALITY ASSURANCE EXECUTIVE (AGRICULTURE)

A QUALITY ASSURANCE EXECUTIVE (AGRICULTURE) IS DESIGNATED TO PERFORM RESPONSIBLE TO WORK TOGETHER WITH QUALITY ASSURANCE TEAM RELATED TO THE REVIEW AND APPROVAL OF PRODUCTS OR MATERIAL IN STRICT ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, CURRENT GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES, AND REGULATORY REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance Executive (Agriculture) will be able to:

1. Coordinate and organise the daily activities of the Quality Assurance Departments and assigned staff in accordance with the organisation's policies, procedures and legal requirements;
2. Assist in providing QA input during design and development phases to ensure all requirements are properly documented;
3. Assist in responding to Quality Assurance-related inquiries/complaint from management, customers, suppliers and regulatory agencies;
4. Perform and documents investigations, corrective and preventative actions; tracking; trending; and maintenance of historical files;
5. Perform material review activities; identification, investigation, and closeout of manufacturing non-conformances;
6. Analyse and reviews manufacturing deviations;
7. Organise personnel training ensuring documented training records in an orderly manner that facilitates easy retrieval and review;
8. Organise production materials testing for acceptability in accordance with written procedures;
9. Performs internal and external quality audits;
10. Participate in finalising inspections and audits to ensure compliance with GMPs, SOPs, company practices and procedures and governmental regulations, including safety rules and regulations; and
11. Assist in preparing periodic reports for business and management.

Pre-requisites:

- i. Qualification : Minimum Degree in related field
- ii. Experience : Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

QUALITY ASSURANCE MANAGER (AGRICULTURE)

THE QUALITY ASSURANCE MANAGER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR ALL OPERATIONAL ASPECTS OF THE QUALITY ASSURANCE DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT-SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance Manager (Agriculture) will be able to:

1. Lead, manages, coordinates and prioritises the daily activities of the Quality Assurance Departments and assigned staff in accordance with the organisation's policies, procedures and legal requirements;
2. Establish and maintain the Quality Management System or other applicable standards;
3. Conduct internal and external quality audit to ensure company and supplier operations comply with standard;
4. Guide the operations team for all quality matters, e.g. preparing work instructions, reviewing quality records, etc;
5. Develop, implement and maintain the Quality Management Plan;
6. Work closely with the purchasing section to evaluate and qualify vendors;
7. Assess customer's complaints and recommend corrective action;
8. Manage customer and certification audits;
9. Drive Continuous Improvement projects/initiatives for the organisation;
10. Ensure that all personnel are adequately trained, and where required, certified;
11. Ensure that training is appropriately documented in training records in an orderly manner that facilitates easy retrieval and review; and
12. Prepares periodic reports for business and management.

Pre-requisites:

- i. Qualification : Minimum Degree in related field
- ii. Experience : Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY LEVEL 7

QUALITY ASSURANCE/QUALITY CONTROL/QUALITY MANAGEMENT DIRECTOR (AGRICULTURE)

QUALITY ASSURANCE/QUALITY CONTROL/QUALITY MANAGEMENT DIRECTOR (AGRICULTURE) IS DESIGNATED TO DIRECT, LEAD AND FOR ALL OPERATIONAL ASPECTS OF THE QUALITY MANAGEMENT DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance/Quality Control/Quality Management Director (Agriculture) will be able to:

1. Direct, lead and coordinate company's Quality Assurance, Quality Control and Quality Management plans, systems and activities;
2. Responsible for all product quality issues, including managing internal and external communication on product qualities;
3. Identify on-going quality issues and make recommendations to improve current processes;
4. Interface with customers, suppliers, engineering and manufacturing groups on quality related issues;
5. Provide training in statistical concepts and techniques;
6. Establish, review and approve quality control methods and procedures;
7. Collaborate with other departments to ensure the establishment of comprehensive quality specifications of current and new products with due compliance to established parameters;
8. Oversee vendor rating to ensure that vendors are sufficiently competent to provide quality products and that are produced under a controlled Quality Control systems; and
9. Advise in development of business systems and processes beyond product and services quality.

Pre-requisites:

- i. Academic Qualification : Minimum Masters Degree in related field
- ii Experience : Minimum 10 years

ANNEX 6.5.2:

QA/QC/QM

(Quality Control)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

QUALITY CONTROL INSPECTOR (AGRICULTURE)

A QUALITY CONTROL INSPECTOR (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR THE PHYSICAL INSPECTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING QUALITY TESTING AS PER SPECIFICATION AND PARAMETERS.

A Quality Control Inspector (Agriculture) will be able to:

1. Collect material sample for daily in-coming, in-process, finished goods and outgoing quality testing as per physical specification and parameters;
2. Ensure of effective use of all inspection and measuring equipments;
3. Ensure proper reporting and filing of inspection and testing results/data
4. Report any off-specification immediately to superior; and
5. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre-requisites:

- i. Academic Qualification : Minimum SPM Certificate
- ii. Experience : Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

QUALITY CONTROL TECHNICIAN (AGRICULTURE)

A QUALITY CONTROL TECHNICIAN (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR THE INSPECTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING QUALITY TESTING AS PER SPECIFICATION AND PARAMETERS. CONDUCT MINOR TROUBLESHOOTING FOR EQUIPMENT AND MATERIAL.

A Quality Control Technician (Agriculture) will be able to:

1. Collect material sample for daily in-coming, in-process, finished goods and outgoing quality testing as per specification and parameters;
2. Ensure of effective use of all inspection and measuring equipments in quality control room;
3. Ensure proper reporting and filing of inspection and testing results / data;
4. Perform initial analysis on test and inspected activities and to report any off-specification immediately to superior;
5. Perform minor troubleshooting for off-specification material with guidance from QC Executive; and
6. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre-requisites:

- i. Academic Qualification : Minimum Certificate in Science or related fields
- ii. Experience : Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

QUALITY CONTROL ASSISTANT (AGRICULTURE)

A QUALITY CONTROL ASSISTANT (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR INSPECTING AND ANALYSIS OF QUALITY TESTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING AS PER SPECIFICATION AND PARAMETERS IN STRICT ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, CURRENT GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES, AND REGULATORY REQUIREMENTS WHEREVER APPLICABLE.

A Quality Control Assistant (Agriculture) will be able to:

1. Carry-out daily Quality Control testing for in-coming, in-process and finished goods as per specification and parameters;
2. Record all test and analysis using written log or specific programme and software ;
3. Ensure all test, monitoring and measuring equipment are in good condition and calibrated;
4. Assist in conducting audit for process or quality management system;
5. Analyse product quality defect through investigation, test and trial; and
6. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre-requisites:

- i. Academic Qualification : Minimum Diploma in related fields
- ii. Experience : Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

QUALITY CONTROL EXECUTIVE (AGRICULTURE)

A QUALITY CONTROL EXECUTIVE (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE TO LEAD THE QUALITY CONTROL TEAM IN INSPECTING AND ANALYSING QUALITY TESTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING AS PER SPECIFICATION AND PARAMETERS.

A Quality Control Executive (Agriculture) will be able to:

1. Supervise and monitor QC Assistants performance on daily Quality Control testing for in-coming, in-process and finished goods as per specification and parameters;
2. Review all test and analysis through physical log or specific programme and software;
3. Review calibration and maintenance of all test, monitoring and measuring equipment are in good condition and calibrated;
4. Conduct audit for process or quality management system;
5. Review analysis of product quality defect investigation, test and trial;
6. Provide technical training to QC team regarding QC tools, equipment, investigation, test and trial method;
7. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination;
8. Conduct quality system audits to ensure the effectiveness of quality system;
9. Provide technical training to management and employees regarding the adequacy of safety Program, operational methods and personnel practices, maintenance of safety and cleanliness practices and GMP requirement;
10. Conduct customer complaint investigation to resolve root cause of non-conformance;
11. Participate in validation activities in support of continuous improvement programs; and
12. Prepare written document such as work instruction, specification, test method, sampling plan forms, etc which may impact product quality and safety and initiate periodic review of those documents.

Pre-requisites:

- i. Academic Qualification : Minimum Degree in related field
- ii. Experience : Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

QUALITY CONTROL MANAGER (AGRICULTURE)

A QUALITY CONTROL MANAGER (AGRICULTURE) IS DESIGNATED TO PLAN, COORDINATE AND DIRECT THE QUALITY CONTROL PROGRAM TO ENSURE CONTINUOUS PRODUCTION OF PRODUCTS CONSISTENT WITH ESTABLISHED STANDARDS BY LEADING THE DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF QUALITY CONTROL SYSTEMS AND PROGRAMS TO MEET BUSINESS OBJECTIVES, QUALITY SYSTEMS AND REGULATORY REQUIREMENTS.

A Quality Control Manager (Agriculture) will be able to:

1. Develop and implement standards, methods, and procedures for inspecting, testing and evaluating the precision, accuracy, efficacy and reliability of products;
2. Manage timelines and appropriate sense of urgency in all aspects of quality control team functions;
3. Provide guidance to QC employees, work priorities for quality control group and ensure appropriate turnaround times that accurately reflect product release needs;
4. Ensure all materials and products are tested in accordance with written procedures;
5. Provide inspection activity throughout the supply chain, including raw material, in process and finished good;
6. Provide product release for raw material, in-process, final product and stability;
7. Investigate failures in a timely manner to identify possible root causes;
8. Develop corrective/preventative actions to prevent recurrence of failures;
9. Perform audits of the laboratory and document results appropriately;
10. Write and review sops and specifications and methods for use in quality control;
11. Provide support for technology transfers from product development to quality control;
12. Assist product development in formulating new products or in establishing standards for these products prior to initial production;
13. Provide troubleshooting activities for product and process performance, this includes complaint investigation and non-conformance investigations.

Pre-requisites:

- i. Academic Qualification : Minimum Degree in related fields
- ii. Experience : Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

QUALITY ASSURANCE/QUALITY CONTROL/QUALITY MANAGEMENT DIRECTOR (AGRICULTURE)

A QUALITY ASSURANCE/QUALITY CONTROL/QUALITY MANAGEMENT DIRECTOR (AGRICULTURE) IS DESIGNATED TO DIRECT, LEAD AND FOR ALL OPERATIONAL ASPECTS OF THE QUALITY MANAGEMENT DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance/Quality Control/Quality Management Director (Agriculture) will be able to:

1. Direct, lead and coordinate company's Quality Assurance, Quality Control and Quality Management plans, systems and activities;
2. Responsible for all product quality issues, including managing internal and external communication on product qualities;
3. Identify on-going quality issues and makes recommendations to improve current processes;
4. Interface with customers, suppliers, engineering and manufacturing groups on quality related issues;
5. Provide training in statistical concepts and techniques;
6. Establish, review and approve quality control methods and procedures;
7. Collaborate with other departments to ensure the establishment of comprehensive quality specifications of current and new products with due compliance to established parameters;
8. Oversee vendor rating to ensure that vendors are sufficiently competent to provide quality products and that are produced under a controlled Quality Control systems;
9. Advise in development of business systems and processes beyond product and services quality.

Pre-requisites:

- i. Academic Qualification : Minimum Masters Degree in related fields
- ii. Experience : Minimum 10 years

ANNEX 6.5.3:

QA/QC/QM

(Quality Management)



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

DOCUMENT CONTROLLER (AGRICULTURE)

A DOCUMENT CONTROLLER (AGRICULTURE) IS DESIGNATED TO MANAGE DOCUMENTS OF AN ORGANISATION FOR A PROJECT OR WHOLE ORGANISATION TO A MUCH HIGHER DEGREE OF RELIABILITY FOR SECURITY, VERSION, VISIBILITY, AVAILABILITY AND, MOST IMPORTANTLY, WITH A CONTROLLED RELIABLE AUDIT TRAIL.

A Document Controller (Agriculture) will be able to:

1. Follow the document or numbering policy of the company;
2. Follow the company's procedure and a clear understanding of company's document moment system;
3. Implement processes and tools, providing system reports;
4. Maintain and update electronic information systems, distributing documents, and ensuring accuracy of all documentation are all essential functions of a document controller;
5. Ensure regulatory procedures and changes are followed is also an essential part of the job junction;
6. Ensure that all corporate documents are well checked and submitted on time prior to the documents submission due date;
7. Perform regular audit on corporate documents in order to ensure that all documents are properly submitted to other departments;
8. Ensure that all documents have no errors in filenames, submissions, etc before submitting it to the nest department to avoid confusion; and
9. Preparing all documents and communicating with employees in order to make submissions early is part of the job description of a document controller.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

QUALITY MANAGEMENT MANAGER (AGRICULTURE)

A QUALITY MANAGEMENT MANAGER (AGRICULTURE) IS DESIGNATED TO MONITOR AND ADVISE ON THE PERFORMANCE OF THE QUALITY MANAGEMENT SYSTEM AND PRODUCE DATA AND REPORT ON PERFORMANCE, MEASURING AGAINST SET INDICATORS.

A Quality Management Manager (Agriculture) will be able to:

1. Focus not only on product or service quality, but also the means to achieve it;
2. Promote quality achievement and performance improvement throughout the organisation;
3. Maintain awareness of the business context and company profitability, including budgetary control issues;
4. Work with purchasing staff to establish quality requirements from external suppliers;
5. Ensure compliance with national and international standards and legislation;
6. Consider the application of environmental and health and safety standards;
7. Define quality procedures in conjunction with operating staff;
8. Set up and maintain controls and documentation procedures;
9. Supervise technical staff in carrying out tests and checks;
10. Prepare clear explanatory documents such as customers' charters; and
11. Monitor performance by gathering relevant data and producing statistical reports.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 5-10 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

**QUALITY ASSURANCE/QUALITY CONTROL/QUALITY MANAGEMENT
DIRECTOR (AGRICULTURE)**

QUALITY ASSURANCE/QUALITY CONTROL/QUALITY MANAGEMENT DIRECTOR (AGRICULTURE) IS DESIGNATED TO DIRECT, LEAD AND FOR ALL OPERATIONAL ASPECTS OF THE QUALITY MANAGEMENT DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance/Quality Control/Quality Management Director (Agriculture) will be able to:

1. Direct, lead and coordinate company's Quality Assurance, Quality Control and Quality Management plans, systems and activities;
2. Responsible for all product quality issues, including managing internal and external communication on product qualities;
3. Identify on-going quality issues and make recommendations to improve current processes;
4. Interface with customers, suppliers, engineering and manufacturing groups on quality related issues;
5. Provide training in statistical concepts and techniques;
6. Establish, review and approve quality control methods and procedures;
7. Collaborate with other departments to ensure the establishment of comprehensive quality specifications of current and new products with due compliance to established parameters;
8. Oversee vendor rating to ensure that vendors are sufficiently competent to provide quality products and that are produced under a controlled Quality Control systems; and
9. Advise in development of business systems and processes beyond product and services quality.

Pre-requisites:

- i. Academic Qualification : Minimum Masters Degree in related field
- ii. Experience : Minimum 10 years

ANNEX 6.6

HEALTH, SAFETY AND ENVIRONMENT (HSE) DIVISION

ANNEX 6.6.1:

HSE

(Environment)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

WASTE TREATMENT ASSISTANT (AGRICULTURE)

WASTE TREATMENT ASSISTANT (AGRICULTURE) IS DESIGNATED TO INVOLVE IN OPERATING, MAINTAINING, MONITORING, AND ADJUSTING OR WASTE TREATMENT PLANTS, BOOSTER OR SEWAGE PUMPING STATION EQUIPMENT IN ORDER TO ENSURE COMPLIANCE WITH GOVERNMENT LAWS, REGULATIONS AND POLICIES.

A Waste Treatment Assistant (Agriculture) will be able to:

1. Conduct sampling duties in compliance with state and federal regulations;
2. Conduct a variety of process tests;
3. Monitor sludge levels in process tanks;
4. Clean service area equipment such as process floats, tanks, weirs, walls scum collectors, cascades, and distribution boxes;
5. Assist with mechanical preventative and corrective maintenance of process equipment, valves, and structures at treatment plants, and sewage pumping station, and water booster stations;
6. Conduct instrumentation and electrical corrective preventative maintenance;
7. Conduct service area equipment and plant vehicles preventative maintenance;
8. Conduct general housekeeping, buildings and ground maintenance at treatment plants, pump or booster stations; and
9. Perform related duties as required.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM Level 2 in related field.
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

WASTE TREATMENT TECHNICIAN (AGRICULTURE)

A WASTE TREATMENT TECHNICIAN (AGRICULTURE) IS DESIGNATED TO APPLY THEORY AND PRINCIPLES OF ENVIRONMENTAL ENGINEERING TO MODIFY, TEST, AND OPERATE EQUIPMENT AND DEVICES USED IN THE PREVENTION, CONTROL, AND REMEDIATION OF ENVIRONMENTAL POLLUTION, INCLUDING WASTE TREATMENT AND SITE REMEDIATION. MAY ASSIST IN THE DEVELOPMENT OF ENVIRONMENTAL POLLUTION REMEDIATION DEVICES UNDER THE DIRECTION OF SUPERIOR.

A Waste Treatment Technician (Agriculture) will be able to:

1. Operate equipment used for filtering sludge to separate liquids from solids;
2. Performs routine inspections, start-up and shutdown procedures and emergency operations;
3. Ensure that filter-pressed material is properly prepared for transportation to a landfill or another designated area;
4. Track and record all of the essential production data;
5. Handle and direct the handling of chemicals for the line and for pollution control; and
6. Ensure proper functioning of the wastewater treatment system by maintaining the proper ph levels in process tanks to comply with all environmental regulations.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in related field.
- ii. Experience: Not necessary



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 4**

WASTE TREATMENT SUPERVISOR (AGRICULTURE)

A WASTE TREATMENT SUPERVISOR (AGRICULTURE) IS DESIGNATED TO SUPERVISE THE WASTE TREATMENT ACTIVITIES.

A Waste Treatment Supervisor (Agriculture) will be able to:

1. Maintain effective communication with county departments and staff to facilitate and ensure adherence to policies and procedures;
2. Supervise and coordinate activities of a designated unit; determine work procedures, prepare work schedules and determine methods for expediting workflow; assign, review and approve the work of subordinate staff;
3. Oversee the Sludge Management Program in compliance with local, state and federal regulations;
4. Obtain permits, submit tests and reports, attend public meetings and coordinate sludge hauling and contracted acceptance;
5. Prepare and administer annual budget for the laboratory, pretreatment program, sludge hauling and for contracted sludge utilisation;
6. Establish and implement policies, plans, procedures and standards for the efficient and effective operation and maintenance of the laboratory;
7. Provide planning leadership and direction and develops short and long range plans; develop and prepare data for reports and recommendations;
8. Analyse needs and recommend improvements to the existing laboratory; and
9. Ensure that managers, appropriate personnel and agencies are apprised of laboratory test results, pretreatment activities and sludge issues by submitting technical reports and updates.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM Level 4 in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

ENVIRONMENTAL EXECUTIVE (AGRICULTURE)

AN ENVIRONMENTAL EXECUTIVE (AGRICULTURE) IS DESIGNATED TO MONITOR DEVELOPMENTS AND ENSURE COMPANY COMPLIANCES AT ALL TIMES WITH APPLICABLE LEGAL REQUIREMENTS ON ENVIRONMENTAL MATTERS WITH RESPECT TO OSH ACT, FACTORY MACHINERY ACT, AND ENVIRONMENTAL QUALITY ACT AND RELATED ACTS.

An Environment Executive (Agriculture) will be able to:

1. Assist Section/Department Heads maintaining an environmental compliance working condition;
2. Ensure all processing activities adhering to the respective approved environmental compliance operating procedure;
3. Initiate and coordinate all environmental awareness activities and training;
4. Evaluate and approve Environmental Analysis;
5. Prepare and submit all relevant reports to DOE and other relevant environmental related local authorities as required;
6. Manage all waste disposal and waste recycling activities;
7. Maintain records on all waste disposal quantity and quality;
8. Maintain a list of current approved waste disposal contractors;
9. Maintain the waste disposal agreements/contracts; and
10. Conduct Environmental Audits where required.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Environmental or equivalent.
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

ENVIRONMENTAL MANAGER (AGRICULTURE)

AN ENVIRONMENTAL MANAGER (AGRICULTURE) IS RESPONSIBLE FOR EXAMINING CORPORATE ACTIVITIES TO ESTABLISH WHERE IMPROVEMENTS CAN BE MADE AND ENSURE COMPLIANCE WITH ENVIRONMENTAL LEGISLATION ACROSS THE ORGANISATION.

An Environment Manager (Agriculture) will be able to:

1. Develop and implement environmental strategies and action plans that ensure corporate sustainable development;
2. Lead on sustainable procurement for all goods and services;
3. Coordinate all aspects of pollution control, waste management, recycling, environmental health, conservation and renewable energy;
4. Lead the implementation of environmental policies and practices;
5. Ensure compliance with environmental legislation;
6. Carry out impact assessments to identify, assess and reduce an organisation's environmental risks and financial costs;
7. Promote and raise awareness, at all levels of an organisation, of the impact of emerging environmental issues, whether legislative or best practice, on corporate, ethical and social responsibility;
8. Manage the development and implementation of an environmental management system; and
9. Train staff at all levels in environmental issues and responsibilities.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Environmental or equivalent.
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

HEALTH, SAFETY AND ENVIRONMENT DIRECTOR (AGRICULTURE)

HEALTH, SAFETY AND ENVIRONMENT DIRECTOR (AGRICULTURE) IS DESIGNATED TO PROVIDE ADVICE, SUPPORT AND GUIDANCE ON ALL MATTERS OF LEGAL COMPLIANCE REGARDING HEALTH AND SAFETY, THUS ENSURING THAT THE COMPANY MEETS THE NECESSARY LEGISLATIVE OBLIGATIONS.

A Health, Safety and Environment Director (Agriculture) will be able to:

1. Drive the continuous improvement of health and safety management;
2. Facilitate the development of innovative policies and practices;
3. Review policies and prepare comprehensive reports for senior management and the health and safety committee;
4. Review and maintain health and safety related work plans for all projects;
5. Ensure that effective tools, systems, and policies are in place to ensure compliance with both internal expectations and legal requirements;
6. Proactively identify and address health, safety, and security issues/concerns;
7. Recognise safety performance excellence, and address situations where performance fails to meet expectation;
8. Build a strong organisation by developing people and attracting top talent to the health, safety and security team;
9. Support the company's global H&S goals as an active member of and contributor to the H&S leadership team;
10. Represent the company through involvement with various boards, commissions, associations and community groups to maintain and develop professional relations and promote community's good will.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science Occupational Health and Safety or equivalent.
- ii. Experience: Minimum 10 years

ANNEX 6.6.2:

HSE

(Health and Safety)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

HEALTH AND SAFETY TECHNICIAN (AGRICULTURE)

A HEALTH AND SAFETY TECHNICIAN (AGRICULTURE) IS DESIGNATED TO ENSURE THAT ITS ACTIVITIES PRESENT A HIGH LEVEL OF PROTECTION FOR THE HEALTH AND SAFETY OF ITS EMPLOYEES, CUSTOMERS, THE PUBLIC AND THE ENVIRONMENT.

A Health and Safety Technician (Agriculture) will be able to:

1. Prevent harm to workers, property, the environment, and the general public;
2. Promote occupational health and safety within organisations;
3. Conduct inspections and inform the management of a business which areas may not be in compliance with government policies, in order to gain their support for addressing these areas;
4. Advise management on the cost and effectiveness of safety and health programs;
5. Collect data on work environments for analysis by occupational health and safety specialists;
6. Assist in implementing and evaluating programs designed to limit risks to workers;
7. Identify potential hazards in systems, equipment, products, facilities, or processes planned for use in the future;
8. Conduct training sessions for management, supervisors, and workers on health and safety practices and regulations to promote an understanding of a new or existing process;
9. Examine and test machinery and equipment to ensure the machinery and equipment meet appropriate safety regulations; and
10. Ensure that hazardous materials are stored correctly.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in Occupational Health and Safety or equivalent



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

HEALTH AND SAFETY OFFICER (AGRICULTURE)

A HEALTH AND SAFETY OFFICER (AGRICULTURE) IS DESIGNATED TO PERFORM A VARIETY OF ROUTINE AND COMPLEX ADMINISTRATIVE, TECHNICAL, AND PROFESSIONAL WORK IN ANALYSING AND ADMINISTERING VARIOUS COMPONENTS OF THE ENVIRONMENTAL, HEALTH AND SAFETY PROGRAMS.

A Health and Safety Officer (Agriculture) will be able to:

1. Design and recommend effective OH&S system that establishes authority and accountability for safety at the department level;
2. Lead process of developing and recommending OH&S policy and standards or changes to existing standards and the enforcement of them;
3. Consult with department safety personnel in the implementation of safety programs, analysis, problem solving, and corrective action plans;
4. Evaluate accident statistics and define target goals for performance and monitor for achievement of goals; recommend long-range accident prevention and cost-control objectives designed to meet established goals;
5. Develop and implement processes, methods and tools designed to measure, evaluate, and monitor departmental safety performance;
6. Oversee the design, preparation, analysis and distribution of safety data and statistical reports concerning accidents, trends and solutions to work related problems to all departments and executive management;
7. Develop and oversee contracts with consultants for services provided to the Company.
8. Develop and initiate new programs and services related to OH&S strategic long-range plans;
9. Oversee review and approval process for department Accident Prevention Plans; and
10. Develop and implement a sound OH&S document and record management system.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Science Occupational Health and Safety or equivalent
- ii. Experience: Minimum 2 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5
HEALTH AND SAFETY EXECUTIVE (AGRICULTURE)**

A HEALTH AND SAFETY EXECUTIVE (AGRICULTURE) IS DESIGNATED TO MONITOR DEVELOPMENTS AND ENSURE COMPANY COMPLIANCES AT ALL TIMES WITH APPLICABLE LEGAL REQUIREMENTS ON HEALTH AND SAFETY MATTERS WITH RESPECT TO OSH ACT, FACTORY MACHINERY ACT, AND ENVIRONMENTAL QUALITY ACT AND RELATED ACTS.

A Health and Safety Executive (Agriculture) will be able to:

1. Assist Section/Department Heads maintaining a healthy and safe working environment;
2. Ensure all processing activities adhering to the respective approved health and safe operating procedure;
3. Initiate and coordinate all health and safety awareness activities and training;
4. Evaluate and approve Occupational Health and Safety Analysis;
5. Maintain and update Material Safety Data Sheets (MSDS) or Chemical Safety Data Sheets (CSDS), both in English and Bahasa Malaysia;
6. Ensure MSDS/CSDS availability and easily accessibility to all users at the places where the chemicals are used or stored;
7. Conduct HSE Inspection at regular basis together with the appointed members of the HSE Committee;
8. Update and maintain Re-Act Summary and Accident/Incident Summary on monthly basis;
9. Maintain a register of all Lost Time Injuries (LTIs) and near misses/unsafe acts, and report to Head-Office;
10. Ensure Personal Protective Equipment (PPE), safety kits, machine safety guards (and safety control devices) and safety protection equipments (e.g. fire-protection system) are available in good condition; and
11. Ensure external contractors and vendors carrying out works are inducted and made aware of the health and safety requirements and that all safe working conditions are observed and complied with the work permits requirements (when issued).

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in Occupational Health and Safety or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

OCCUPATIONAL HEALTH AND SAFETY MANAGER (AGRICULTURE)

OCCUPATIONAL HEALTH AND SAFETY MANAGER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR DEVELOPING AND IMPLEMENTING PROGRAMS AND POLICIES THAT ENSURE THE OVERALL SAFETY AND HEALTH OF EMPLOYEES AND THAT ENABLES COMPLIANT BUSINESS OPERATIONS.

An Occupational Health and Safety Manager (Agriculture) will be able to:

1. Plan, organise and conduct Monthly Supervisor Safety meetings for three shifts at three separate locations;
2. Inspect organisation facilities to detect existing or potential hazards and recommend corrective or preventative measures;
3. Oversee workers compensation claims management;
4. Develop and maintain Health and Safety programs and policies as required;
5. Conduct root cause analysis of industrial accidents and illnesses and develop actions plans to eliminate hazards;
6. Provide leadership, strategic planning and subject matter expertise that ensures appropriate EH&S systems and resources are in place;
7. Create Health and Safety Plan to ensure conformance with regulatory and company requirements; and
8. Promote knowledge transfer through regional teams, best practices and training.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science Occupational Health and Safety or equivalent.
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

HEALTH, SAFETY AND ENVIRONMENT DIRECTOR (AGRICULTURE)

HEALTH, SAFETY AND ENVIRONMENT DIRECTOR (AGRICULTURE) IS DESIGNATED TO PROVIDE ADVICE, SUPPORT AND GUIDANCE ON ALL MATTERS OF LEGAL COMPLIANCE REGARDING HEALTH AND SAFETY THUS ENSURING THAT THE COMPANY MEETS THE NECESSARY LEGISLATIVE OBLIGATIONS.

A Health, Safety and Environment Director (Agriculture) will be able to:

1. Drive the continuous improvement of health and safety management;
2. Facilitate the development of innovative policies and practices;
3. Review policies and prepare comprehensive reports for senior management and the health and safety committee;
4. Review and maintain health and safety related work plans for all projects;
5. Ensure that effective tools, systems, and policies are in place to ensure compliance with both internal expectations and legal requirements;
6. Proactively identify and address health, safety, and security issues/concerns.
7. Recognise safety performance excellence, and address situations where performance fails to meet expectation;
8. Build a strong organisation by developing people and attracting top talent to the health, safety and security team;
9. Support the company's global H&S goals as an active member of and contributor to the H&S leadership team; and
10. Represent the company through involvement with various boards, commissions, associations and community groups to maintain and develop professional relations and promote community's good will.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science Occupational Health and Safety or equivalent
- ii. Experience: Minimum 10 years

ANNEX 6.7:

**REGULATORY AFFAIRS
DIVISION**

ANNEX 6.7.1:

Regulatory Affairs (Compliance)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

COMPLIANCE ASSISTANT EXECUTIVE

A COMPLIANCE ASSISTANT EXECUTIVE (AGRICULTURE) IS DESIGNATED TO SUPPORT THE COMPLIANCE EXECUTIVE AND COMPLIANCE DEPARTMENT IN OVERSEEING THE COMPLIANCE FUNCTION OF THE COMPANY, INCLUDING MONITORING THE COMPANY PRACTICES TO ENSURE CONSISTENCY WITH THE BUSINESS RULES, GUIDELINES AND REGULATIONS.

A Compliance Assistant Executive (Agriculture) will be able to:

1. Assist in establishing a compliance program, reporting, investigation and recommendation of remedial action;
2. Provide compliance advice and ensure enforcement of all compliance programmes;
3. Assist in reviewing filings with regulators, regular compliance returns and internal investigations;
4. Match the company's compliance effort including staff training, liaison with external auditors and the relevant authorities; and
5. Check new products to confirm compliance with applicable regulations.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Law/Corporate Secretarial/Accountancy qualifications or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

COMPLIANCE EXECUTIVE (AGRICULTURE)

A COMPLIANCE EXECUTIVE (AGRICULTURE) IS DESIGNATED TO SUPPORT COMPLIANCE DEPARTMENT IN OVERSEEING THE COMPLIANCE FUNCTION OF THE COMPANY, INCLUDING MONITORING THE COMPANY PRACTICES TO ENSURE CONSISTENCY WITH THE BUSINESS RULES, GUIDELINES AND REGULATIONS.

A Compliance Executive (Agriculture) will be able to:

1. Establish a compliance program, reporting, investigation and recommendation of remedial action;
2. Provide compliance advice and ensure enforcement of all compliance programmes;
3. Review filings with regulators, regular compliance returns and internal investigations;
4. Match the company's compliance effort including staff training, liaison with external auditors and the relevant authorities;
5. Supervise, support, and resolve issues with department professional and support staff; and
6. Assure department staff adhere to policies, procedures, deadlines, and other regulatory requirements of the company

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Law/Corporate Secretarial/Accountancy qualifications or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

REGULATORY AFFAIRS MANAGER (AGRICULTURE)

A REGULATORY AFFAIRS MANAGER (AGRICULTURE) IS DESIGNATED TO MANAGE REGULATORY AFFAIRS TEAM AND REGULATORY AFFAIRS RELATED ACTIVITIES TO KEEP TRACK OF THE EVER-CHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Manager (Agriculture) will be able to:

1. Attend to Regulatory enquiry, audit and submission of documents;
2. Responsible to manage the departmental operations for regulatory compliance of the company's products and licenses;
3. Keep abreast with local country and overseas legislation and guidelines;
4. Review company practices and advising on regulatory requirements;
5. Oversee preparation and/or review regulatory documentation including verifying finished artwork (ie. labels, package inserts, unit boxes);
6. Ensure smooth process of product registrations and licenses;
7. Liaise closely, build and maintain rapport with the regulatory authorities;
8. Manage and maintain Patents/Intellectual Property validity for all registered Patents; and
9. Work closely with R&D, Production, QA, QC, Marketing Department for projects such as new product development and launching.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in related field or equivalent.
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

REGULATORY AFFAIRS DIRECTOR (AGRICULTURE)

A REGULATORY AFFAIRS DIRECTOR (AGRICULTURE) IS DESIGNATED TO DIRECTS REGULATORY OPERATIONS GROUP WHICH IS RESPONSIBLE FOR SUBMISSION OF ALL REGULATORY COMMUNICATIONS IN ACCORDANCE WITH APPLICABLE GOVERNMENTAL REGULATIONS AND GUIDANCES.

A Regulatory Affairs Director (Agriculture) will be able to:

1. Conduct reviews of submissions for completeness, scientific accuracy and ease of review;
2. Provide regulatory guidance Regulatory and Compliance team;
3. Direct preparation and review of annual reports and supplements for marketed products;
4. Manage and develops staff in group to provide career growth;
5. Monitor and assess impact of regulations, guidance, current regulatory environment and competitive labeling;
6. Provide regulatory guidance to functional areas to ensure understanding and compliance with appropriate regulations and guidelines;
7. Oversee Company Regulatory function.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in related field or equivalent.
- ii. Experience: Minimum 7 years

ANNEX 6.7.2:

Regulatory Affairs (Regulatory)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

REGULATORY AFFAIRS ASSISTANT EXECUTIVE (AGRICULTURE)

AN REGULATORY AFFAIRS ASSISTANT EXECUTIVE (AGRICULTURE) IS DESIGNATED TO ASSIST REGULATORY AFFAIRS TEAM TO KEEP TRACK OF THE EVER-CHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Assistant Executive (Agriculture) will be able to:

1. Provide assistance to the Regulatory Affairs team with regulatory affairs relating to products;
2. Check sources for updated regulations, new consultative documents and other HSE information/issues relevant to the company;
3. Assist with the establishing and modification of procedures in the Responsible Care and quality areas;
4. Ensure company comply with all of the regulations and laws pertaining to their business;
5. Advise company on the regulatory aspects and climate that would affect proposed activities; and
6. Provide regulatory support to product in various stages of development.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Diploma in related field or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

REGULATORY AFFAIRS EXECUTIVE (AGRICULTURE)

A REGULATORY AFFAIRS EXECUTIVE (AGRICULTURE) IS DESIGNATED TO INVOLVE IN REGULATORY AFFAIRS TEAM TO KEEP TRACK OF THE EVER-CHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Executive (Agriculture) will be able to:

1. Provide assistance to the Regulatory Affairs team with regulatory affairs relating to products;
2. Check sources for updated regulations, new consultative documents and other HSE information/issues relevant to the company;
3. Assist with the establishing and modification of procedures in the Responsible Care and quality areas;
4. Ensure company comply with all of the regulations and laws pertaining to their business;
5. Advise company on the regulatory aspects and climate that would affect proposed activities; and
6. Provide regulatory support to product in various stages of development.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in related field or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

REGULATORY AFFAIRS MANAGER (AGRICULTURE)

A REGULATORY AFFAIRS MANAGER (AGRICULTURE) IS DESIGNATED TO MANAGE REGULATORY AFFAIRS TEAM AND REGULATORY AFFAIRS RELATED ACTIVITIES TO KEEP TRACK OF THE EVER-CHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Manager (Agriculture) will be able to:

1. Attend to Regulatory enquiry, audit and submission of documents;
2. Responsible to manage the departmental operations for regulatory compliance of the company's products and licenses;
3. Keep abreast with local country and overseas legislation and guidelines;
4. Review company practices and advising on regulatory requirements;
5. Oversee preparation and/or review regulatory documentation including verifying finished artwork (ie labels, package inserts, unit boxes);
6. Ensure smooth process of product registrations and licenses;
7. Liaise closely, build and maintain rapport with the regulatory authorities;
8. Manage and maintain Patents/Intellectual Property validity for all registered Patents;
9. Work closely with R&D, Production, QA, QC, Marketing Department for projects such as new product development and launching.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in related field or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

REGULATORY AFFAIRS DIRECTOR (AGRICULTURE)

A REGULATORY AFFAIRS DIRECTOR (AGRICULTURE) IS DESIGNATED TO DIRECTS REGULATORY OPERATIONS GROUP WHICH IS RESPONSIBLE FOR SUBMISSION OF ALL REGULATORY COMMUNICATIONS IN ACCORDANCE WITH APPLICABLE GOVERNMENTAL REGULATIONS AND GUIDANCES.

A Regulatory Affairs Director (Agriculture) will be able to:

1. Conduct reviews of submissions for completeness, scientific accuracy and ease of review;
2. Provide regulatory guidance Regulatory and Compliance team;
3. Direct preparation and review of annual reports and supplements for marketed products;
4. Manage and develop staff in group to provide career growth;
5. Monitor and assess impact of regulations, guidance, current regulatory environment and competitive labeling;
6. Provide regulatory guidance to functional areas to ensure understanding and compliance with appropriate regulations and guidelines;
7. Oversee Company Regulatory function.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in related field or equivalent
- ii. Experience: Minimum 7 years

ANNEX 6.8:

ENGINEERING DIVISION

ANNEX 6.8.1:

Engineering (Maintenance)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

ENGINEERING ASSISTANT TECHNICIAN (AGRICULTURE)

ENGINEERING ASSISTANT TECHNICIAN (AGRICULTURE) IS DESIGNATED TO ROUTINE TECHNICAL OFFICE AND FIELD ENGINEERING FUNCTIONS IN CONNECTION WITH ASSIGNED PROJECT ACTIVITIES AND PERFORMS OTHER DUTIES ASSIGNED.

An Engineering Assistant Technician (Agriculture) will be able to:

1. Update various computer databases relating to work using office software;
2. Assist contractors and the public in interpreting and complying with construction requirements;
3. Use drafting techniques and procedures to prepare routine engineering designs;
4. Develop graphs, charts, and exhibits for presentation;
5. Assist in the performance of research and in developing project design and cost estimates for the assigned project;
6. Assist in field inspections of projects, developments, and other improvements; and
7. Inspect and maintain daily written records of progress made in construction and materials used.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM Level 2 in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

ENGINEERING TECHNICIAN (AGRICULTURE)

AN ENGINEERING TECHNICIAN (AGRICULTURE) IS DESIGNATED TO ASSIST IN TECHNICAL TASKS, CONTRIBUTORY TO DESIGN, DEVELOPMENT, MANUFACTURE, CONSTRUCTION, INSTALLATION, MAINTENANCE AND REPAIR OF MECHANICALLY FUNCTIONING PLANT AND EQUIPMENT AND REPAIR OF ELECTRICAL SYSTEMS AND EQUIPMENT.

An Engineering Technician (Agriculture) will be able to:

1. Assist in research and development works concerning machine tools, engines, heating and ventilating, refrigerating installations, mechanically functioning plant and equipment, electrical systems, equipment and facilities and testing prototypes;
2. Design and prepare layouts of machines, mechanical installations, electrical installations and circuitry;
3. Prepare detailed estimates of quantities and costs of materials and labour required for manufacture and installation;
4. Assist with technical supervision of manufacture, utilisation, maintenance and repair of mechanical plant and engines and repair of electrical systems and equipment;
5. Apply technical knowledge of machinery and mechanical engineering principles and apply technical knowledge of electrical engineering theory and practice in order to identify and solve problems arising in the course of their work; and
6. Assist in the development and monitor the implementation of safety standards and procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT TECHNOLOGIST (AGRICULTURE)

AN ASSISTANT TECHNOLOGIST (AGRICULTURE) IS DESIGNED TO PERFORMS A VARIETY OF PROFESSIONAL FIELD AND OFFICE ENGINEERING WORK IN CONNECTION WITH THE DESIGN, DEVELOPMENT, SPECIAL PROJECTS, TRANSPORTATION AND CONSTRUCTION SECTIONS OF THE ENGINEERING DIVISION AND OTHER RELATED ENGINEERING PROJECTS.

An Assistant Technology (Agriculture) will be able to:

1. Check construction plans for accuracy and conformance with requirements;
2. Confer with contractors, engineers to resolve complaints;
3. Assist and work with other sections within the engineering division on specific assigned tasks;
4. Recommend engineering requirements within established procedures and standards;
5. Conduct preliminary studies of engineering projects including making calculations,
6. Prepare budgets and project schedule, gather supporting data, and analyse alternatives;
7. Conduct utility master plan studies and fee updates; and
8. Update pavement management system.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in engineering or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

MAINTENANCE TECHNOLOGIST (AGRICULTURE)

A MAINTENANCE TECHNOLOGIST (AGRICULTURE) IS DESIGNED TO APPLY ENGINEERING CONCEPTS TO THE OPTIMISATION OF EQUIPMENT, PROCEDURES, AND DEPARTMENTAL BUDGETS TO ACHIEVE BETTER MAINTAINABILITY, RELIABILITY, AND AVAILABILITY OF EQUIPMENT.

A Maintenance Technologist (Agriculture) will be able to:

1. Analyse repetitive equipment failures;
2. Prepare estimation of maintenance costs and evaluation of alternatives;
3. Forecast of equipment spare parts;
4. Assess the needs for equipment replacements and establish replacement programs when due;
5. Apply project management and scheduling principles to replacement programs;
6. Assess required maintenance tools and skills required for efficient maintenance of equipment;
7. Write maintenance strategies to help with installation and commissioning guidelines;
8. Assess required skills required for maintenance personnel;
9. Review personnel transfers to and from maintenance organisations; and
10. Assess and report safety hazards associated with maintenance of equipment.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Engineering (Electrical/Electronic/ Mechanical/ Mechatronic /Electromechanical) or equivalent.
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

MAINTENANCE MANAGER (AGRICULTURE)

A MAINTENANCE MANAGER (AGRICULTURE) IS DESIGNATED TO ENSURE THAT COMPANY'S FACILITIES AND EQUIPMENTS ARE EFFECTIVELY MAINTAINED TO MAXIMISE PERFORMANCE OF PRODUCTION EQUIPMENT EFFICIENTLY AND REGULARLY, PREVENT BREAKDOWN OR FAILURES, MINIMISE PRODUCTION LOSS FROM FAILURES AND INCREASE RELIABILITY OF THE OPERATING SYSTEMS.

A Maintenance Manager (Agriculture) will be able to:

1. Design, implement, and modify preventive maintenance programs by reviewing production, quality control, and maintenance reports and statistics;
2. Supervise facilities maintenance department personnel; Direct and supervise contract maintenance services for landscaping, roofing, janitorial, forklift, and pest control services;
3. Maintain maintenance staff job results by coaching, counseling, and disciplining employees; Plan, monitor and appraise job results; Complete maintenance operational requirements by scheduling and assigning employees; Follow up on work results;
4. Schedule and prioritise maintenance, preventive maintenance and repairs activities of the facility, structures, equipment and events. Insure timely completion of work;
5. Identify current and future maintenance requirements by establishing rapport with management, engineering, and production personnel, tradesmen, technicians, and other persons in a position to understand maintenance requirements;
6. Direct maintenance operations by initiating, coordinating, and enforcing program, operational, and personnel policies and procedures;
7. Provide and maintain heat, cool, electric power, gas, compressed air, water, and dust collection by directing installation of, modifications to, and maintenance activities on utility systems; and
8. Facilitate employee training.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree Engineering or equivalent
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

ENGINEERING AND MAINTENANCE DIRECTOR (AGRICULTURE)

ENGINEERING AND MAINTENANCE DIRECTOR (AGRICULTURE) IS DESIGNATED TO ORGANISE AND OVERSEES REPAIR CREWS TO ENSURE JOBS ARE PERFORMED SAFELY AND EFFICIENTLY. IN ORDER TO PROVIDE THE BEST POSSIBLE SERVICES, A DIRECTOR NEEDS TO HAVE EXPERT KNOWLEDGE OF MANY ASPECTS OF CONSTRUCTION AND REPAIR.

An Engineering and Maintenance Director (Agriculture) will be able to:

1. Develop and set the engineering, maintenance and facilities strategy and communicate this effectively;
2. Lead team to provide advice, policy, specifications and provision of engineering, maintenance and facilities services to enable company's facilities operate effectively;
3. Work with property buying and corporate purchasing to source the best value, lowest cost to deliver engineering and maintenance solutions which are better, simpler and cheaper;
4. Forecast trends in engineering developments and seek opportunities to maintain competitive advantage;
5. Manage cost centre expenditure to be within budgets and maximise return from the development programme budget by exercising effective use and control;
6. Identify and implement opportunities to make cost savings and achieve year on year reduction in revenue and capital expenditure;
7. Set clear direction to ensure team is clear on their accountabilities and deliverables; and
8. Develop, motivate and manage team to build capability and future talents.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Engineering, Building, Construction or related field
- ii. Experience: minimum 10 years

ANNEX 6.8.2:

Engineering (Project Engineering)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

ENGINEERING ASSISTANT TECHNICIAN (AGRICULTURE)

ENGINEERING ASSISTANT TECHNICIAN (AGRICULTURE) IS DESIGNATED TO ROUTINE TECHNICAL OFFICE AND FIELD ENGINEERING FUNCTIONS IN CONNECTION WITH ASSIGNED PROJECT ACTIVITIES AND PERFORMS OTHER DUTIES ASSIGNED.

An Engineering Assistant Technician (Agriculture) will be able to:

1. Update various computer databases relating to work using office software;
2. Assist contractors and the public in interpreting and complying with construction requirements;
3. Use drafting techniques and procedures to prepare routine engineering designs;
4. Develop graphs, charts, and exhibits for presentation;
5. Assist in the performance of research and in developing project design and cost estimates for the assigned project;
6. Assist in field inspections of projects, developments, and other improvements; and
7. Inspect and maintain daily written records of progress made in construction and materials used.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM Level 2 in related field
- ii. Experience: Not Necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

ENGINEERING TECHNICIAN (AGRICULTURE)

ENGINEERING TECHNICIAN (AGRICULTURE) IS DESIGNATED TO ASSIST IN TECHNICAL TASKS, CONTRIBUTORY TO DESIGN, DEVELOPMENT, MANUFACTURE, CONSTRUCTION, INSTALLATION, MAINTENANCE AND REPAIR OF MECHANICALLY FUNCTIONING PLANT AND EQUIPMENT AND REPAIR OF ELECTRICAL SYSTEMS AND EQUIPMENT.

An Engineering Technician (Agriculture) will be able to:

1. Assist in research and development works concerning machine tools, engines, heating and ventilating, refrigerating installations, mechanically functioning plant and equipment, electrical systems, equipment and facilities and testing prototypes;
2. Design and prepare layouts of machines, mechanical installations, electrical installations and circuitry;
3. Prepare detailed estimates of quantities and costs of materials and labour required for manufacture and installation;
4. Assist with technical supervision of manufacture, utilisation, maintenance and repair of mechanical plant and engines and repair of electrical systems and equipment;
5. Apply technical knowledge of machinery and mechanical engineering principles and apply technical knowledge of electrical engineering theory and practice in order to identify and solve problems arising in the course of their work; and
6. Assist in the development and monitoring of the implementation of safety standards and procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT TECHNOLOGIST (AGRICULTURE)

AN ASSISTANT TECHNOLOGIST (AGRICULTURE) IS DESIGNED TO PERFORMS A VARIETY OF PROFESSIONAL FIELD AND OFFICE ENGINEERING WORK IN CONNECTION WITH THE DESIGN, DEVELOPMENT, SPECIAL PROJECTS, TRANSPORTATION AND CONSTRUCTION SECTIONS OF THE ENGINEERING DIVISION AND OTHER RELATED ENGINEERING PROJECTS.

An Assistant Technology (Agriculture) will be able to:

1. Check construction plans for accuracy and conformance with requirements;
2. Confer with contractors, engineers to resolve complaints;
3. Assist and work with other sections within the engineering division on specific assigned tasks;
4. Recommend engineering requirements within established procedures and standards;
5. Conduct preliminary studies of engineering projects including making calculations,
6. Prepare budgets and project schedule, gather supporting data, and analyse alternatives;
7. Conduct utility master plan studies and fee updates; and
8. Update pavement management system.

Pre-requisites:

- i.Academic Qualification: Possess minimum Diploma in Engineering or equivalent
- ii.Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

MECHANICAL TECHNOLOGIST (AGRICULTURE)

A MECHANICAL TECHNOLOGIST (AGRICULTURE) CONDUCTS RESEARCH AND ADVICES ON DESIGN AND DIRECT PRODUCTION OF MACHINES, MACHINERY AND INDUSTRIAL PLANT, EQUIPMENT AND SYSTEMS, AND ADVISE ON AND DIRECT THEIR FUNCTIONING, MAINTENANCE AND REPAIRS, OR STUDY AND ADVICE ON TECHNOLOGICAL ASPECTS OF PARTICULAR MATERIALS, PRODUCTS OR PROCESSES.

A Mechanical Technologist (Agriculture) will be able to:

1. Advise in designing machinery and tools for manufacturing, mining, construction, agricultural work and other industrial purposes;
2. Advise in designing steam, internal combustion and other non-electric motors and engines used for driving industrial or other machinery;
3. Advise in designing power plant, heating and ventilation systems, steering gear, pumps and other mechanical equipment;
4. Advise in designing road vehicle bodies, suspension systems, brakes and other components;
5. Advise in designing heating, ventilation and refrigeration systems and equipment;
6. Advise in designing mechanical plant and equipment for the release, control and
7. Advise in designing non-electrical parts of apparatus or products such as word processors, computers, precision instruments, cameras and projectors; and
8. Establish control standards and procedures to ensure efficient functioning and safety of machines, machinery, tools, motors, engines, and industrial plant, equipment or system.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Mechanical Engineering or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

PROJECT TECHNOLOGIST (AGRICULTURE)

A PROJECT TECHNOLOGIST (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE FOR COORDINATION OF ALL TECHNICAL ACTIVITIES ON ASSIGNED PROJECTS.

A Project Technologist (Agriculture) will be able to:

1. Head project meetings to collect and disseminate information pertaining to projects.
2. Coordinate the collection and dissemination of technical information between/within the company and customer.
3. Schedule and monitor program activity to achieve an “on-time” result including follow-up with external suppliers to ensure timely response to action items.
4. Monitor program cost activity to achieve an “in budget” result.
5. Prepare quotations utilising supplier information, cost standards, technical information from quality, manufacturing engineering, design.
6. Create bill of material, detailed instructions for manufacturing process of new part, specification for packaging, external supplier specification to provide standard cost structure and instructions for manufacturing.
7. Evaluates project performance of functional areas.
8. Selects and recommends procedures or development of methods.
9. Prepares designs, drawings, plans and specifications for projects, engineered systems, technical equipment or components.
10. Supervises technical testing, survey or field engineering teams.
11. Assist in client contact and communication pertaining to specific projects; and
12. Reviews and monitors project progress to assure quality and adherence to requirements of contract documents.

Pre-requisites:

- i. Academic Qualification: Possess minimum Bachelor of Science Degree in Engineering
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

PROJECT ENGINEERING MANAGER (AGRICULTURE)

A PROJECT ENGINEERING MANAGER (AGRICULTURE) IS DESIGNATED TO BE RESPONSIBLE IN PLANNING, ORGANISING, AND MANAGING RESOURCES TO BRING ABOUT THE SUCCESSFUL COMPLETION OF SPECIFIC PROJECT GOALS AND OBJECTIVES.

A Project Engineering Manager (Agriculture) will be able to:

1. Create and execute project work plans and revises as appropriate to meet changing needs and requirements;
2. Identify resources needed and assigns individual responsibilities;
3. Manage day-to-day operational aspects of a project and scope;
4. Review deliverables prepared by team before passing to client;
5. Prepare for engagement reviews and quality assurance procedures;
6. Minimize exposure and risk on project; and
7. Ensure project documents are complete, current, and stored appropriately.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree Engineering or equivalent
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

ENGINEERING AND MAINTENANCE DIRECTOR (AGRICULTURE)

AN ENGINEERING AND MAINTENANCE DIRECTOR (AGRICULTURE) IS DESIGNATED TO ORGANISE AND OVERSEE REPAIR CREWS TO ENSURE JOBS ARE PERFORMED SAFELY AND EFFICIENTLY. IN ORDER TO PROVIDE THE BEST POSSIBLE SERVICES, A DIRECTOR NEEDS TO HAVE EXPERT KNOWLEDGE OF MANY ASPECTS OF CONSTRUCTION AND REPAIR.

An Engineering and Maintenance Director (Agriculture) will be able to:

1. Develop and set the engineering, maintenance and facilities strategy and communicate this effectively;
2. Lead team to provide advice, policy, specifications and provision of engineering, maintenance and facilities services to enable company's facilities operate effectively;
3. Work with property buying and corporate purchasing to source the best value, lowest cost to deliver engineering and maintenance solutions which are better, simpler and cheaper;
4. Forecast trends in engineering developments and seek opportunities to maintain competitive advantage;
5. Manage cost centre expenditure to be within budgets and maximise return from the development programme budget by exercising effective use and control;
6. Identify and implement opportunities to make cost savings and achieve year on year reduction in revenue and capital expenditure;
7. Set clear direction to ensure team is clear on their accountabilities and deliverables; and
8. Develop, motivate and manage team to build capability and future talents.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Engineering, Building, Construction or related field
- ii. Experience: Minimum 10 years

ANNEX 6.8.3:

Engineering (Electrical and Instrumentation)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

ENGINEERING ASSISTANT TECHNICIAN (AGRICULTURE)

AN ENGINEERING ASSISTANT TECHNICIAN (AGRICULTURE) IS DESIGNATED TO ROUTINE TECHNICAL OFFICE AND FIELD ENGINEERING FUNCTIONS IN CONNECTION WITH ASSIGNED PROJECT ACTIVITIES AND PERFORMS OTHER DUTIES ASSIGNED.

An Assistant Engineering Technician (Agriculture) will be able to:

1. Update various computer databases relating to work using office software;
2. Assist contractors and the public in interpreting and complying with construction requirements;
3. Use drafting techniques and procedures to prepare routine engineering designs;
4. Develop graphs, charts, and exhibits for presentation;
5. Assist in the performance of research and in developing project design and cost estimates for the assigned project;
6. Assist in field inspections of projects, developments, and other improvements;
7. Inspect and maintain daily written records of progress made in construction and materials used.

Pre-requisites:

- i. Academic Qualification: Possess minimum certificate in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

ENGINEERING TECHNICIAN (AGRICULTURE)

AN ENGINEERING TECHNICIAN (AGRICULTURE) IS DESIGNATED TO ASSIST IN TECHNICAL TASKS, CONTRIBUTORY TO DESIGN, DEVELOPMENT, MANUFACTURE, CONSTRUCTION, INSTALLATION, MAINTENANCE AND REPAIR OF MECHANICALLY FUNCTIONING PLANT AND EQUIPMENT AND REPAIR OF ELECTRICAL SYSTEMS AND EQUIPMENT.

An Engineering Technician (Agriculture) will be able to:

1. Assist in research and development works concerning machine tools, engines, heating and ventilating, refrigerating installations, mechanically functioning plant and equipment, electrical systems, equipment and facilities and testing prototypes;
2. Design and prepare layouts of machines, mechanical installations, electrical installations and circuitry;
3. Prepare detailed estimates of quantities and costs of materials and labour required for manufacture and installation;
4. Assist with technical supervision of manufacture, utilisation, maintenance and repair of mechanical plant and engines and repair of electrical systems and equipment;
5. Apply technical knowledge of machinery and mechanical engineering principles and apply technical knowledge of electrical engineering theory and practice in order to identify and solve problems arising in the course of their work; and
6. Assist in the development and monitor the implementation of safety standards and procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in related field
- ii. Experience: Minimum 1 year



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT TECHNOLOGIST (AGRICULTURE)

AN ASSISTANT TECHNOLOGIST (AGRICULTURE) IS DESIGNED TO PERFORM A VARIETY OF PROFESSIONAL FIELD AND OFFICE ENGINEERING WORK IN CONNECTION WITH THE DESIGN, DEVELOPMENT, SPECIAL PROJECTS, TRANSPORTATION AND CONSTRUCTION SECTIONS OF THE ENGINEERING DIVISION AND OTHER RELATED ENGINEERING PROJECTS.

An Assistant Technologist (Agriculture) will be able to:

1. Check construction plans for accuracy and conformance with requirements;
2. Confer with contractors, engineers to resolve complaints;
3. Assist and work with other sections within the engineering division on specific assigned tasks;
4. Recommend engineering requirements within established procedures and standards;
5. Conduct preliminary studies of engineering projects including making calculations,
6. Prepare budgets and project schedule, gather supporting data, and analyse alternatives;
7. Conduct utility master plan studies and fee updates; and
8. Update pavement management system.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in engineering or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

INSTRUMENTATION TECHNOLOGIST (AGRICULTURE)

AN INSTRUMENTATION TECHNOLOGIST (AGRICULTURE) IS DESIGNED TO DESIGN, DEVELOP, ADAPT, TEST AND MAINTAIN ELECTRONIC COMPONENTS, CIRCUITS AND SYSTEMS USED FOR COMPUTER SYSTEMS, COMMUNICATIONS SYSTEMS AND INDUSTRIAL APPLICATIONS.

An Instrumentation Technologist (Agriculture) will be able to:

1. Advise in designing electronic devices, circuits and systems used for computers, communications and control systems and other industrial applications;
2. Design software especially embedded software to be used within such systems;
3. Develop apparatus and procedures to test electronic components, circuits and systems;
4. Supervise installation and commissioning of computer and telecommunications systems and ensuring proper control and protection methods;
5. Establish control standards and procedures to ensure efficient functioning and safety of electronic systems, motors and equipment;
6. Locate and correct malfunctions;
7. Organise and direct maintenance and repair of existing electronic systems, motors and equipment;
8. Study and advise on technological aspects of particular materials, products or processes;
9. Maintain technical liaison and consultancy with other relevant specialists;
10. Performing related tasks; and
11. Supervising other workers.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Electrical/Electronic Engineering or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

ELECTRICAL AND INSTRUMENTATION MANAGER (AGRICULTURE)

AN ELECTRICAL AND INSTRUMENTATION MANAGER (AGRICULTURE) IS DESIGNATED TO OVERSEE A TEAM OF MAINTENANCE PROFESSIONALS WHO COORDINATE AND CARRY OUT ALL TASKS RELATED TO THE REPAIR AND IMPROVEMENT OF THE ELECTRICAL SYSTEMS AND INSTRUMENTATION, ELECTRONIC COMPONENTS, CIRCUITS AND SYSTEMS USED FOR COMPUTER SYSTEMS, COMMUNICATIONS SYSTEMS AND INDUSTRIAL APPLICATIONS.

An Electrical and Instrumentation Manager (Agriculture) will be able to:

1. Oversee a team of electrical and instrumentation service professionals, scheduling them for work, assigning tasks and reviewing their performance.
2. Negotiate all service contract agreements with external vendors;
3. Keep detailed records of all pending and completed work orders, maintaining these files in an organisationally implemented record-keeping system.
4. Be responsible for preparing and maintaining his department's budget, tracking all expenses as they occur.
5. Ensure the team under his/her supervision performs all of their duties in compliance with any laws that regulate the field.

Pre-requisite:

- i. Academic Qualification: Possess minimum Degree in Electrical/Electronic Engineering or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

ENGINEERING AND MAINTENANCE DIRECTOR (AGRICULTURE)

AN ENGINEERING AND MAINTENANCE DIRECTOR (AGRICULTURE) IS DESIGNATED TO ORGANISE AND OVERSEES REPAIR CREWS TO ENSURE JOBS ARE PERFORMED SAFELY AND EFFICIENTLY. IN ORDER TO PROVIDE THE BEST POSSIBLE SERVICES, A DIRECTOR NEEDS TO HAVE EXPERT KNOWLEDGE OF MANY ASPECTS OF CONSTRUCTION AND REPAIR.

An Engineering and Maintenance Director (Agriculture) will be able to:

1. Develop and set the engineering, maintenance and facilities strategy and communicate this effectively;
2. Lead team to provide advice, policy, specifications and provision of engineering, maintenance and facilities services to enable company's facilities operate effectively;
3. Work with property buying and corporate purchasing to source the best value, lowest cost to deliver engineering and maintenance solutions which are better, simpler and cheaper
4. Forecast trends in engineering developments and seek opportunities to maintain competitive advantage;
5. Manage cost centre expenditure to be within budgets and maximise return from the development programme budget by exercising effective use and control;
6. Identify and implement opportunities to make cost savings and achieve year on year reduction in revenue and capital expenditure;
7. Set clear direction to ensure team is clear on their accountabilities and deliverables; and
8. Develop, motivate and manage team to build capability and future talents.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Engineering, Building, Construction or related field
- ii. Experience: Minimum 10 years

ANNEX 6.9:

BIONFORMATICS



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT BIOINFORMATICIAN (AGRICULTURE)

AN ASSISTANT BIOINFORMATICIAN (AGRICULTURE) IS DESIGNATED TO PRIMARILY ASSIST ACTIVITIES PERTAINING TO DESIGN AND DEVELOPMENT OF BIOINFORMATICS SOFTWARE FOR IDENTIFIED BIOTECHNOLOGY SECTOR.

An Assistant Bioinformatician (Agriculture) will be able to:

1. Assist in designing bioinformatics software development;
2. Assist in the installation and testing of the software;
3. Maintain functionality of the hardware and peripherals and software;
4. Assist in documentation of bioinformatics data;
5. Assist report preparation; and
6. Keep and update records and procedures.

Pre-requisites:

- i. Academic Qualification: Diploma in IT/Computer Science and Biotechnology or related field
- ii. Experience: Minimum 1 year



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

BIOINFORMATICIAN (AGRICULTURE)

A BIOINFORMATICIAN (AGRICULTURE) IS DESIGNATED TO PRIMARILY CARRY-OUT ACTIVITIES PERTAINING TO DESIGN AND DEVELOPMENT OF BIOINFORMATICS SOFTWARE FOR BIOTECHNOLOGY SECTOR. DEALS WITH THE MATHEMATICAL MODELING AS WELL AS BIOINFORMATICS SOFTWARE DEVELOPMENT BASED ON SEMANTIC ENVIRONMENT.

A Bioinformatician (Agriculture) will be able to:

1. Carry out development on the new bioinformatics software, databases and data analysis, and computer systems;
2. Manage existing bioinformatics software development, databases and data analysis, and computer systems;
3. Carry out data collection and data analysis;
4. Make the necessary report and recommendations from the analysed data;
5. Maintain and ensure the software conforms to requirements;
6. Implement review and update standard operating procedures;
7. Develop of quality scientific software including writing new code and optimising existing code and algorithms for high performance computing environment;
8. Handle bioinformatics tool development, biological data and system analysis;
9. Handle analytical bioinformatics software design and development;
10. Execute Formulation and Designing Mathematical Model based on Drug Development.

Pre-requisites:

- i. Academic Qualification: Degree in IT/Computer Science and Biotechnology or related fields
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

BIOINFORMATICS MANAGER (AGRICULTURE)

A BIOINFORMATICS MANAGER (AGRICULTURE) IS DESIGNATED TO PRIMARILY MANAGE, ORGANISE AND ADMINISTER ACTIVITIES PERTAINING TO DEVELOPMENT PLAN, SYSTEM ANALYSIS, DATABASES AND ANALYSIS, SOFTWARE AND HARDWARE DEVELOPMENT, USER SUPPORT, INSTALLATION AND MAINTENANCE OF OPERATING SYSTEM AND MAINTAIN NETWORKING WITH OTHER ENTITIES.

A Bioinformatics Manager (Agriculture) will be able to:

1. Manage existing bioinformatics software development, databases and data analysis, and computer systems;
2. Plan and propose additional bioinformatics software development, databases and data analysis, and computer system;
3. Execute, coordinate and evaluate client's needs;
4. Carry out evaluation on the overall operation;
5. Manage human resource including recruitment, training, performance appraisal and staff development;
6. Supervise the implementation, review and update data and network security system;
7. Ensure systems conformance to standard and specifications;
8. Responsible for department procurement and inventory.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in IT/Computer Science and Biotechnology or related fields
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

BIOINFORMATICS DIRECTOR (AGRICULTURE)

A BIOINFORMATICS DIRECTOR (AGRICULTURE) IS RESPONSIBLE TO CREATION AND ADVANCEMENT OF DATABASES, ALGORITHMS, COMPUTATIONAL AND STATISTICAL TECHNIQUES AND THEORY TO SOLVE FORMAL AND PRACTICAL PROBLEMS ARISING FROM THE MANAGEMENT AND ANALYSIS OF BIOLOGICAL DATA.

A Bioinformatics Director (Agriculture) will be able to:

1. Map and analyse DNA and protein sequences, aligning different DNA and protein sequences to compare them and creating and viewing 3-D models of protein structures;
2. Provide requirements towards anticipated technological changes that will impact computational and storage requirements as well as require additional support resources or reassignment of existing resources;
3. Responsible for building programs by using computational formulas to determine outcomes based on biological projects or research;
4. Create query routines and building relational databases;
5. Review database system to ensure it always in line with the current technology.

Pre-requisites:

- i. Academic Qualification: Possess minimum Masters Degree in IT/Computer Science and Biotechnology or related fields
- ii. Experience: Minimum 10 years

ANNEX 7:

OCCUPATIONAL DEFINITIONS IN THE HEALTHCARE BIOTECHNOLOGY

ANNEX 7.1:

RESEARCH AND DEVELOPMENT DIVISION

Annex 7.1.1:

R&D

(Product Enhancement)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

RESEARCH & DEVELOPMENT TECHNICIAN (HEALTHCARE)

A RESEARCH AND DEVELOPMENT TECHNICIAN (HEALTHCARE) IS DESIGNATED TO PERFORM A VARIETY OF BASIC TESTS TO DETERMINE THE FUNCTIONALITY OF PRODUCTS AND FUTURE DEVELOPMENTS, ASSIST PRODUCT MANAGEMENT WITH VIABLE SOLUTIONS, COLLABORATE WITH OTHER TEAM MEMBERS FOR FUTURE DEVELOPMENTS, CONDUCTING PRODUCT DESIGN TESTS, ASSEMBLE PROTOTYPES AND COLLECT DATA IN SUPPORT OF PRODUCT DEVELOPMENT AND BUSINESS UNIT EFFORTS.

A Research and Development Technician (Healthcare) will be able to:

1. Perform basic test to determine the functionality of products;
2. Conduct product design testing;
3. Assemble prototype of the product;
4. Identifies raw material needs from R&D formula;
5. Gathers raw materials from onsite samples or orders appropriately;
6. Inspect the defection of product; and
7. Clean equipment after use.

Pre-requisites:

- i. Academic Qualification: Possess minimum certificate in Science or equivalent
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

RESEARCH & DEVELOPMENT SUPERVISOR (HEALTHCARE)

A RESEARCH AND DEVELOPMENT SUPERVISOR (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR SUPERVISING THE ACTIVITIES TO EVALUATE THE QUALITY AND STABILITY OF IN-PROCESS AND FINAL PRODUCT MATERIALS IN ACCORDANCE WITH STANDARD GUIDELINES.

A Research and Development Supervisor (Healthcare) will be able to:

1. Work with vendors and manufacturers to ensure that their compliance with quality standards and health regulations and company guidelines;
2. Assist the development and execution of material planning strategies that support objectives such as supplier transitions while maintaining continuity of supply;
3. Understand business processes, systems and technology to analyse problems and develop solutions;
4. Become the material planning process and drive continuous improvement to inventory management;
5. Provide input for Material Resource Planning (MRP); and
6. Support the forecasting and planning strategies in line with Production Schedule.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Science or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

RESEARCH AND DEVELOPMENT EXECUTIVE (HEALTHCARE)

A RESEARCH AND DEVELOPMENT EXECUTIVE (HEALTHCARE) IS DESIGNATED TO WORK CLOSELY WITH TEAMS FOR TECHNICAL DEVELOPMENT, DOCUMENTATION, TESTING, EXPLORING AND DEPLOYMENT OF APPLICATION.

A Research and Development Executive (Healthcare) will be able to:

1. Assist R&D Manager in contributing with relevant information and proposals to the Management;
2. Monitor R&D activities to ensure compliance to standards and specifications;
3. Monitor vendors and manufacturers in compliance to product and material specification;
4. Assist with the development and execution of material planning strategies that support objectives such as supplier transitions while maintaining continuity of supply;
5. Understand business processes, systems and technology to analyse problems and develop solutions;
6. Review documents, such as research programme, manpower planning and specifications to obtain information, such as materials, priorities, and personnel requirements;
7. Confer with establishment personnel, vendors, and manufacturers in ensuring project's scientific resources;
8. Complete status reports, such as research progress, customer feedback and materials inventory; and
9. Assist in identifying and coordinating accredited and non accredited training for the R&D team.

Pre-requisites:



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

RESEARCH AND DEVELOPMENT MANAGER (HEALTHCARE)

A RESEARCH AND DEVELOPMENT MANAGER (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR SAFETY, PURITY AND AFFICACY OF THE OVERALL DIRECTION OF A SPECIFIC PROJECT(S) WITHIN THE R&D DEPARTMENT'S SCHEDULE AND BUDGET.

A Research and Development Manager (Healthcare) will be able to:

1. Manage and develop the research and conservation of projects;
2. Manage the science and research aspect of the R&D activities including staff management, communications, projects, scientific reporting and R&D promotion;
3. Identify funding and work opportunities and to develop sponsorship and promotional activities;
4. Observe project activities through reporting system and advise or enforce change as necessary;
5. Manage installation and implementing a detailed biotechnical laboratory research work plan to fulfil company's research objective; and
6. Understand business processes, systems and technology to analyze problems and develop solutions.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science or equivalent
- ii. Experience: Minimum 5-10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

RESEARCH AND DEVELOPMENT PRINCIPAL (HEALTHCARE)

A RESEARCH AND DEVELOPMENT PRINCIPAL (HEALTHCARE) IS DESIGNATED TO LEAD AND PROVIDE DIRECTION TO RESEARCH TEAM IN DEVELOPING NEW IDEAS AND SCIENTIFIC DISCOVERIES WHICH CAN BE UTILISED IN THE MANUFACTURE AND APPLICATION OF NEW PRODUCTS. THEY ARE CAPABLE OF UNDERSTANDING AND CONTROLLING THE PROCESSES USED TO PRODUCE THE FINAL PRODUCT.

A Research & Development Principal (Healthcare) will be able to:

1. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and manufacturing;
2. Provide professional and personal leadership to research team in R&D Department;
3. Plan and formulate aspects of research and development proposals;
4. Review and analyses proposals submitted to determine if benefits derived and possible applications justify expenditures;
5. Approve and submit proposals considered feasible to management for consideration and allocation of funds or allocates funds to department budget;
6. Develop and implement methods and procedures for monitoring projects in order to inform management of current status of each project; and
7. Develop goals and objectives for staff.

Pre-requisites:

- i. Academic Qualification: Possess minimum PhD in Science or equivalent.
- ii. Experience: Minimum 15 years

Annex 7.1.2:

R&D

(Product Development)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

LAB TECHNICIAN (HEALTHCARE)

A LAB TECHNICIAN (HEALTHCARE) IS DESIGNATED TO HANDLE ROUTINELY SPECIFIC GENERIC EQUIPMENT AND EXPERIMENTAL PROCEDURES. HE/SHE THEREFORE ASSISTS WITH GUIDANCE OF HIS/HER SUPERVISORS IN THE EXECUTION OF SPECIFIC TASKS IN THE GENERATION OF DATA FOR SPECIFIC PROJECT (TASKS) IMPLEMENTED IN THE BIOTECHNOLOGY LABORATORY.

A Lab Technician (Healthcare) will be able to:

1. Prepare basic reagents and media for experiments;
2. Prepare experimental samples;
3. Prepare and use generic equipment;
4. Record and update laboratory data/log book;
5. Undertake housekeeping (cleaning, sample disposal, sterilisation, keeps track of consumables and spare parts);
6. Collect sample, maintaining equipments and facilities on farm laboratory; and
7. Ensure all activities conform to safety procedures in accordance to the organisation's Standard Operating Procedures (SOP).

Pre-requisites:

- iii. Academic Qualification: Possess minimum Certificate in Science or equivalent
- iv. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

RESEARCH ASSISTANT (HEALTHCARE)

AN RESEARCH ASSISTANT (HEALTHCARE) IS DESIGNATED TO ASSIST RESEARCH OFFICER AND SCIENTIST TO CONDUCT RESEARCH IN ORDER TO PRODUCE NEW PRODUCT, EVALUATE MATERIALS AND DEVELOP MACHINERY, EQUIPMENT AND PROCESSES TO MANUFACTURE MATERIALS FOR USE IN PRODUCTS THAT MUST MEET SPECIALISED DESIGN AND PERFORMANCE SPECIFICATIONS.

A Research Assistant (Healthcare) will be able to:

1. Assist the Research Officer in the development and implementation of the research programme of research to cover each survey component;
2. Assist the Research Officer in the accredited and non-accredited training of the volunteer Research Assistants;
3. Assist the Research Officer in managing the collection and processing of accurate field data, including specimen collection, for all survey components;
4. Assist the Research Officer in managing and supervising the maintenance of the project's scientific resources;
5. Analyses verbal or statistical data to prepare reports and studies for use by professional workers in variety of areas.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Science or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5
RESEARCH OFFICER (HEALTHCARE)

A RESEARCH OFFICER (HEALTHCARE) IS DESIGNATED TO ASSIST THE SCIENTIST IN CARRYING OUT THE RESEARCH PROJECT. THE RESEARCH OFFICER WILL BE RESPONSIBLE FOR TOOL DEVELOPMENT AND THE DESIGN, COLLECTION AND ANALYSIS OF EVALUATIVE PROJECT DATA. THE RESEARCH OFFICER WILL WORK CLOSELY WITH THE INDUSTRY PARTNERS IN THE PROJECT.

A Research Officer (Healthcare) will be able to:

1. Perform research on the project under the direction of the Scientist;
2. Participate in the development of a framework, methods and tools to support research activities;
3. Design evaluative instruments;
4. Analyse project data;
5. Draft scientific reports on the project;
6. Coordinate research activities;
7. Supervise all laboratory staffs under his/her supervision;
8. Provide coaching to all laboratory staffs under his/her supervision; and
9. Conduct training to all laboratory staffs under his/her supervision.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science or equivalent



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

SCIENTIST (HEALTHCARE)

A SCIENTIST (HEALTHCARE) IS DESIGNATED TO DEVELOP NEW PRODUCTS AND WORK WITH RESEARCH TEAM TO DEVELOP NEW IDEAS AND SCIENTIFIC DISCOVERIES, WHICH CAN BE UTILISED IN THE MANUFACTURE AND APPLICATION OF NEW PRODUCTS. THEY ARE CAPABLE OF UNDERSTANDING AND CONTROLLING THE PROCESSES USED TO PRODUCE THE FINAL PRODUCT.

A Scientist (Healthcare) will be able to:

1. Plan and conduct experiments and analysing or interpreting the results;
2. Discuss research progress with other departments, e.g. production and marketing (in industry);
3. Devise methods for making products at the required scale;
4. Generate data to substantiate claims regarding the safety and efficacy of new products (this applies particularly to the pharmaceutical healthcare, food and feed sector);
5. Assist the integration of new products with other commercial areas, including brand development, sales strategy and quality assurance, legal, marketing and manufacturing;
6. Formulate and establish product design and performance objectives, normally in consultation with other functions, including research, marketing and production, as well as contractors, suppliers, and customers;
7. Participate in scientific meetings and conferences in sharing professional experiences with other researchers.

Pre-requisites:

- i. Academic Qualification: Possess minimum PhD in Science or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

RESEARCH AND DEVELOPMENT PRINCIPAL (HEALTHCARE)

A RESEARCH AND DEVELOPMENT PRINCIPAL (HEALTHCARE) IS DESIGNATED TO LEAD AND PROVIDE DIRECTION TO RESEARCH TEAM IN DEVELOPING NEW IDEAS AND SCIENTIFIC DISCOVERIES WHICH CAN BE UTILISED IN THE MANUFACTURE AND APPLICATION OF NEW PRODUCTS. THEY ARE CAPABLE OF UNDERSTANDING AND CONTROLLING THE PROCESSES USED TO PRODUCE THE FINAL PRODUCT

A Research And Development Principal (Healthcare) will be able to:

1. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and manufacturing;
2. Provide professional and personal leadership to research team in R&D Department;
3. Plan and formulates aspects of research and development proposals;
4. Review and analyses proposals submitted to determine if benefits derived and possible applications justify expenditures;
5. Approve and submit proposals considered feasible to management for consideration and allocation of funds or allocates funds to department budget;
6. Develop and implement methods and procedures for monitoring projects in order to inform management of current status of each project; and
7. Develop goals and objectives for staff.

Pre-requisites:

- i. Academic Qualification: Possess minimum PhD in Science or equivalent
- ii. Experience: Minimum 15 years

Annex 7.1.3:

R&D

(Clinical/Pre-clinical)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

CLINICAL RESEARCH OFFICER (HEALTHCARE)

A CLINICAL RESEARCH OFFICER (HEALTHCARE) IS DESIGNATED TO ASSIST CLINICAL RESEARCH ASSOCIATE AND OTHER RESEARCH TEAM MEMBERS WITH THE PLANNING AND ONGOING ADMINISTRATION OF PROGRAMS AND RESEARCH ACTIVITIES.

A Clinical Research Officer (Healthcare) will be able to:

1. Conduct laboratory bench works in direct support of scientific and clinical projects;
2. Execute laboratory assays in Immunology, Cell Biology, Parasitological, Entomology; Enteric or Virology Routinely;
3. Maintain an accurate and complete record of work performed in laboratory notebooks or computers; and work is inspected by department heads;
4. Assist to Manage Source Documents (SD) and Case Report Forms (CRF) for **clinical trials** to Good Clinical **Practice** (GCP) standards;
5. Assist to manage regulatory and administrative aspects of clinical trials in accordance with GCP standards;
6. Support the Establishment of Standard Operating Procedures (SOP) to guide regulatory and administrative aspects of clinical field trials;
7. Responsible for the care of equipment and supplies, to include protection from environment, theft or damage.

Pre-requisites:

- v. Academic Qualification: Possess minimum Diploma in Science or equivalent
- vi. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

CLINICAL RESEARCH ASSOCIATE (HEALTHCARE)

A CLINICAL RESEARCH ASSOCIATE (HEALTHCARE) IS DESIGNATED SETS UP, MONITORS AND COMPLETES CLINICAL TRIALS. TRIALS NEED TO BE CARRIED OUT BEFORE A PRODUCT REACHES A HOSPITAL OR THE SHELVES OF THE LOCAL PHARMACY. THEY ARE UNDERTAKEN AT VARIOUS STAGES, OR 'PHASES', AND INCLUDE: TRIALS ON HEALTHY HUMANS; TRIALS ON PATIENTS WITH A DISEASE; AND STUDIES CONDUCTED AFTER THE LAUNCH OF A NEW PRODUCT TO MONITOR SAFETY AND SIDE EFFECTS DURING LARGE-SCALE USE.

A Clinical Research Associate (Healthcare) will be able to:

1. Responsible for the preparation, organisation and monitoring of clinical studies in accordance to International Standard (ICH-GCP);
2. Develop trial protocols (outlining the purpose and methodology of a trial);
3. Present trial protocols to a steering committee;
4. Coordinate with the ethics committee, which safeguards the rights, safety and wellbeing of all trial subjects;
5. Manage regulatory authority applications and approvals that oversee the research and marketing of new and existing drugs;
6. Prepare final reports and occasionally manuscripts for publication; and
7. Responsible for mentoring coaching Clinical Research Officer (CRO).

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science or equivalent
- ii. Experience: 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

CLINICAL RESEARCH OFFICER (HEALTHCARE)

A CLINICAL RESEARCH OFFICER (HEALTHCARE) IS DESIGNATED TO ASSIST CLINICAL RESEARCH ASSOCIATE AND OTHER RESEARCH TEAM MEMBERS WITH THE PLANNING AND ONGOING ADMINISTRATION OF PROGRAMS AND RESEARCH ACTIVITIES.

A Clinical Research Officer (Healthcare) will be able to:

1. Conduct laboratory bench works in direct support of scientific and clinical projects;
2. Execute laboratory assays in Immunology, Cell Biology, Parasitological, Entomology; Enteric or Virology Routinely;
3. Maintain an accurate and complete record of work performed in laboratory notebooks or computers; and work is inspected by department heads;
4. Assist to Manage Source Documents (SD) and Case Report Forms (CRF) for **clinical trials** to Good Clinical **Practice** (GCP) standards;
5. Assist to manage regulatory and administrative aspects of clinical trials in accordance with GCP standards;
6. Support the Establishment of Standard Operating Procedures (SOP) to guide regulatory and administrative aspects of clinical field trials;
7. Responsible for the care of equipment and supplies, to include protection from environment, theft or damage.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Science or equivalent
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

CLINICAL RESEARCH DIRECTOR (HEALTHCARE)

A CLINICAL RESEARCH DIRECTOR (HEALTHCARE) IS DESIGNATED TO DEVELOP AND MAINTAIN LIAISON AMONG OUTSIDE PHYSICIANS, CLINICAL INVESTIGATORS, MEDICAL EDUCATORS, AND DEPARTMENT HEADS IN MEDICAL SCHOOL, CROS, AFFILIATED HOSPITALS, STATE AND/OR GOVERNMENT HOSPITALS, AND RESEARCH INSTITUTIONS TO INITIATE AND EXPEDITE CLINICAL STUDIES ON PRODUCTS (BOTH IDE AND POST-APPROVAL).

A Clinical Research Director (Healthcare) will be able to:

1. Primary liaison with Customers, Vendors, Senior Management and/or Investigative Teams;
2. Direct clinical studies to ensure the contracted services and expectation of clinical study meeting customer expectation;
3. Ensure adherence to internal and Customer quality standards, SOPs, GCPs and ICH guidelines;
4. Manage the executed contract and financial aspects of large full scope or multiple protocol assigned projects/programmes;
5. Review and approve study budgets and expenses;
6. Facilitate team training in accordance with protocol and/or project requirements; and
7. Oversee the regulatory document collection and submission process.

Pre-requisites:

- i. Academic Qualification: Possess minimum Medical Degree or equivalent
- ii. Experience: Minimum 10 years

ANNEX 7.2:

PRODUCTION DIVISION

Annex 7.2.1:

Production
(Administration)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

PRODUCTION ASSISTANT (HEALTHCARE)

A PRODUCTION ASSISTANT (HEALTHCARE) IS DESIGNATED TO PERFORM ADMINISTRATIVE ACTIVITIES THAT INCLUDE CHECKING AND RECORDING PROCESS CONDITIONS OR PARAMETERS IN A BIOPROCESSING. HE/SHE ALSO ASSISTS THE PRODUCTION SUPERVISOR TO ENSURE THE SMOOTH OPERATION.

A Production Assistant (Healthcare) will be able to:

1. Assist in production planning and scheduling preparation;
2. Prepare daily production report on output, work in progress, production percentage and attendance to production supervisor;
3. Control all production records, data and documents;
4. Assist in compiling and review progress and reports to the management; and
5. Key in production data into Material Resources Programme (MRP).

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma or equivalent
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

PRODUCTION SUPERVISOR (HEALTHCARE)

A PRODUCTION SUPERVISOR (HEALTHCARE) IS DESIGNATED TO DIRECTLY SUPERVISE AND COORDINATE ACTIVITIES OF PRODUCTION AND OPERATION WORKERS TO ENSURE A SMOOTH AND SAFE OPERATION OF THE PRODUCTION PLANT IN ACHIEVING HIGH PRODUCTIVITY AND QUALITY PRODUCTS ACCORDING TO PRODUCT SPECIFICATION.

A Production Supervisor (Healthcare) will be able to:

1. Supervise and coordinate the activities of employees engaged in production or processing of goods;
2. Implement work schedules, assignments, and production sequences, to meet production goals;
3. Calculate labour and equipment requirements and production specifications, using standard formulas;
4. Supervise standard achievement and production target based on company objectives, equipment and labour availability;
5. Coordinate operations and activities within departments or between departments;
6. Recommend or implement measures to motivate employees and improve production methods, equipment performance, product quality, or efficiency; and
7. Alert/inform maintenance department of any defects and machinery breakdowns.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM 4 or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

PRODUCTION EXECUTIVE (HEALTHCARE)

A PRODUCTION EXECUTIVE (HEALTHCARE) IS DESIGNATED TO COORDINATE AND EXPEDITE THE FLOW OF WORK AND MATERIALS WITHIN OR BETWEEN DEPARTMENTS OF AN ESTABLISHMENT ACCORDING TO PRODUCTION SCHEDULE.

A Production Executive (Healthcare) will be able to:

1. Review documents, such as production schedules, staffing tables, and specifications to obtain information, such as materials, priorities, and personnel requirements;
2. Confer with establishment personnel, vendors, and customers to coordinate processing and shipping, and to resolve complaints;
3. Complete status reports, such as production progress, customer information, and materials inventory;
4. Examine documents, materials, and products, and monitors work processes for completeness, accuracy, and conformance to standards and specifications;
5. Monitor work progress, provides services, such as furnishing permits, tickets, and union information, and direct workers to expedite work flow;
6. Arrange for delivery and distributes supplies and parts to expedite flow of materials to meet production schedules;
7. Requisition and maintain inventory of materials and supplies to meet production demands.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

PRODUCTION MANAGER (HEALTHCARE)

A PRODUCTION MANAGER (HEALTHCARE) IS DESIGNATED TO PRIMARILY BE RESPONSIBLE FOR THE OVERALL SMOOTH OPERATION OF THE MANUFACTURING AND PRODUCTION. HE/SHE IS ABLE TO TROUBLESHOOT ALL PROCESS MALFUNCTIONS AND CARRY OUT IMMEDIATE CORRECTIVE ACTIONS. HE/SHE ALSO MANAGES ALL PRODUCTION MATTERS INCLUDING TRAINING, BUDGET, RECRUITMENT AND COORDINATE WITH THE MAINTENANCE AND QUALITY ASSURANCE MANAGERS TO ENSURE OPTIMAL OPERATION.

A Production Manager (Healthcare) will be able to:

1. Ensure all production and quality targets are met;
2. Ensure production costs are within budgetary targets;
3. Coordinate with other managers especially Maintenance, Quality Assurance, and higher management departments;
4. Continuously look into the improvement and operation;
5. Regularly conduct troubleshooting exercises; and
6. Responsible in managing human resource including recruitment, training, performance appraisal and staff development to ensure optimal operation.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

PRODUCTION DIRECTOR (HEALTHCARE)

A PRODUCTION DIRECTOR (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR DIRECTION OF COMPANY'S VISION AND MISSION, ANALYSING DATA, PRODUCTION SETTING AND BUDGET PREPARATION.

A Production Director (Healthcare) will be able to:

1. Provide leadership on the full spectrum of product costing and cost controlling activities;
2. Provide data and analyses to group management as well as local management to drive profitability and competitiveness;
3. Responsible for the setting up of product costing, inventory control, valuation and variance analysis;
4. Perform regular forecasts and productivity reviews together with supply chain and sales teams to provide data to management to implement corrective actions during operation review; and
5. Review annual financial budget.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 15 years

Annex 7.2.2:

Production
(Processing)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

GENERAL WORKER (HEALTHCARE)

A GENERAL WORKER (HEALTHCARE) IS UNDER DIRECTION TO PERFORM ROUTINE TASKS IN ENSURING THE WORKING ENVIRONMENT IS ORGANISE, CLEAN AND TIDY, ASSIST IN A WIDE VARIETY OF BASIC SERVICES, DELIVERY AND MAINTENANCE JOBS AS REQUIRED BY THE NEEDS OF THE ORGANISATION.

A General Worker (Healthcare) will be able to:

1. Perform variety of routine tasks to assist in production activities;
2. Keep equipment and working area clean and orderly;
3. Separate product according to weight, grade, size, and composition of material used to produce product;
4. Adhere to all safety procedures; and
5. Assist in preparation of process materials.

Pre-requisite:

- i. Academic Qualification: Possess minimum SPM Certificate



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

PRODUCTION TECHNICIAN (HEALTHCARE)

A PRODUCTION TECHNICIAN (HEALTHCARE) IS DESIGNATED TO PERFORM ACTIVITIES SUCH AS CHECKING AND RECORDING PROCESS CONDITIONS OR PARAMETERS IN A BIOPROCESSING PLANT. HE/SHE MAY CARRY OUT CERTAIN FUNCTIONS TO ENSURE THE SMOOTH OPERATION UNDER SUPERVISION.

A Production Technician (Healthcare) will be able to:

1. Responsible for the operations and maintenance, troubleshooting and smooth running of operational equipments;
2. Responsible in overseeing work in progress (WIP) movements at the production area by monitoring and reporting cycle time and smooth production process;
3. Check and record process parameters in the plant routinely;
4. Maintain and upkeep process plant log book;
5. Alert his/her immediate supervisor of deviation from optimum or normal operating conditions;
6. Weight and measure and check raw materials to assure proper ingredient and quality;
7. Assist the superior in manufacturing specific product related operation; and
8. Adhere to all safety procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM Level 1
- ii. Experience: Not Necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

PROCESS LEADER (HEALTHCARE)

A PROCESS LEADER (HEALTHCARE) IS DESIGNATED TO LEAD AND COORDINATE A GROUP OF TECHNICIANS IN MANUFACTURING, PROCESSING, START-UP, SHUT-DOWN, EMERGENCY AND OTHER PRODUCTION ACTIVITIES IN A SAFE AND EFFECTIVE MANNER TO ACHIEVE THE QUALITY AND QUANTITY ACCORDING TO THE PRODUCTION PLAN.

A Process Leader (Healthcare) will be able to:

1. Lead and guide team of technician in performing production activities in achieving production target;
2. Lead in process troubleshooting and minor repair to reduce downtime;
3. Perform HSE activities together with shift team, monitor safe handling of material and equipment;
4. Assist in the issuance of permit to work system;
5. Lead the operational maintenance work such as equipment cleaning and servicing;
6. Ensure safe and proper way to perform daily tasks, ensuring adherence to all established standards; and
7. Ensure all plant equipment is operated in a manner and condition to produce quality product.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Science or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

PRODUCTION SUPERVISOR (HEALTHCARE)

A PRODUCTION SUPERVISOR (HEALTHCARE) IS DESIGNATED TO DIRECTLY SUPERVISE AND COORDINATE ACTIVITIES OF PRODUCTION AND OPERATION WORKERS TO ENSURE A SMOOTH AND SAFE OPERATION OF THE PRODUCTION PLANT IN ACHIEVING HIGH PRODUCTIVITY AND QUALITY PRODUCTS ACCORDING TO PRODUCT SPECIFICATION.

A Production Supervisor (Healthcare) will be able to:

8. Supervise and coordinate the activities of employees engaged in production or processing of goods;
9. Implement work schedules, assignments, and production sequences, to meet production goals;
10. Calculate labour and equipment requirements and production specifications, using standard formulas;
11. Supervise standard achievement and production target based on company objectives, equipment and labour availability;
12. Coordinate operations and activities within departments or between departments;
13. Recommend or implement measures to motivate employees and improve production methods, equipment performance, product quality, or efficiency; and
14. Alert/inform maintenance department of any defects and machinery breakdowns.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM 4 or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

PROCESS TECHNOLOGIST (HEALTHCARE)

A PROCESS TECHNOLOGIST (HEALTHCARE) IS DESIGNATED TO DEVELOP, ADVANCE, AND IMPROVE PRODUCTS, PROCESSES, OR MATERIALS AND BUILD OR SUPERVISE THE BUILDING OF PROTOTYPES. MAY OPERATE MACHINERY, EQUIPMENT, OR HAND TOOLS TO PRODUCE THEIR PROTOTYPES.

A Process Technologist (Healthcare) will be able to:

1. Lead supervisors in coordinating production operations and activities;
2. Conduct research and analytical studies to develop design or specifications for process improvement;
3. Direct and coordinate activities in designing, producing, creating and fabricating of equipment for prototype or system;
4. Confer with research and engineering personnel to clarify and resolve problems and prepares design modifications as needed;
5. Prepare or direct preparation of product processing through system layout and detailed drawings and schematics;
6. Analyse data to determine feasibility of process optimization;
7. Plan and develop experimental test systems; and
8. Analyse test data and report to determine if design meets functional and performance specifications.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Biotechnology or equivalent



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

PRODUCTION MANAGER (HEALTHCARE)

A PRODUCTION MANAGER (HEALTHCARE) IS DESIGNATED TO PRIMARILY BE RESPONSIBLE FOR THE OVERALL SMOOTH OPERATION OF THE MANUFACTURING AND PRODUCTION. HE/SHE IS ABLE TO TROUBLESHOOT ALL PROCESS MALFUNCTIONS AND CARRY OUT IMMEDIATE CORRECTIVE ACTIONS. HE/SHE ALSO MANAGES ALL PRODUCTION MATTERS INCLUDING TRAINING, BUDGET, RECRUITMENT AND COORDINATE WITH THE MAINTENANCE AND QUALITY ASSURANCE MANAGERS TO ENSURE OPTIMAL OPERATION.

A Production Manager (Healthcare) will be able to:

1. Ensure all production and quality targets are met;
2. Ensure production costs are within budgetary targets;
3. Coordinate with other managers especially Maintenance, Quality Assurance, and higher management departments;
4. Continuously look into the improvement and operation;
5. Regularly conduct troubleshooting exercises; and
6. Responsible in managing human resource including recruitment, training, performance appraisal and staff development to ensure optimal operation.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

PRODUCTION DIRECTOR (HEALTHCARE)

A PRODUCTION DIRECTOR (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR DIRECTION OF COMPANY'S VISION AND MISSION, ANALYSING DATA, PRODUCTION SETTING AND BUDGET PREPARATION.

A Production Director (Healthcare) will be able to:

1. Provide leadership on the full spectrum of product costing and cost controlling activities;
2. Provide data and analyses to group management as well as local management to drive profitability and competitiveness;
3. Responsible for the setting up of product costing, inventory control, valuation and variance analysis;
4. Perform regular forecasts and productivity reviews together with supply chain and sales teams to provide data to management to implement corrective actions during operation review; and
5. Review annual financial budget.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 15 years

Annex 7.2.3:

Production
(Packaging)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

GENERAL WORKER (HEALTHCARE)

A GENERAL WORKER (HEALTHCARE) IS UNDER DIRECTION TO PERFORM ROUTINE TASKS IN ENSURING THE WORKING ENVIRONMENT IS ORGANISE, CLEAN AND TIDY, ASSIST IN A WIDE VARIETY OF BASIC SERVICES, DELIVERY AND MAINTENANCE JOBS AS REQUIRED BY THE NEEDS OF THE ORGANISATION.

A General Worker (Healthcare) will be able to:

1. Perform variety of routine tasks to assist in production activities;
2. Keep equipment and working area clean and orderly;
3. Separate product according to weight, grade, size, and composition of material used to produce product;
4. Adhere to all safety procedures; and
5. Assist in preparation of process materials.

Pre-requisite:

- i. Academic Qualification: Possess minimum SPM Certificate



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

PACKAGING LEADER (HEALTHCARE)

A PACKING LEADER (HEALTHCARE) IS DESIGNATED TO INSPECT, TEST, GRADE, SORT, SAMPLE, OR WEIGH NONAGRICULTURAL RAW MATERIALS OR PROCESSED, MACHINED, FABRICATED, OR ASSEMBLED PARTS OR PRODUCTS. WORK MAY BE PERFORMED BEFORE, DURING, OR AFTER PROCESSING.

A Packing Leader (Healthcare) will be able to:

1. Weigh materials, products, containers, or samples to verify packaging weight, to determine percentage of each ingredient, or to determine sorting;
2. Examine product or monitor processing of product, using any or all of five senses, to determine defects or grade;
3. Measure dimensions of product, using measuring instruments, such as rulers, callipers, gauges, or micrometers, to verify conformance to specifications;
4. Test samples, materials, or products, using test equipment, such as thermometer, voltmeter, moisture meter, or tension meter, for conformance to specifications; and
5. Clean, trim, make adjustments, or rework product or processing equipment to correct defects found during inspection.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM 2 or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

SHIFT LEADER (HEALTHCARE)

A SHIFT LEADER (HEALTHCARE) IS DESIGNATED TO LEAD AND COORDINATE ACTIVITIES OF CREW ENGAGED IN OPERATING AND PRODUCTION. A SHIFT LEADER IS RESPONSIBLE FOR ENSURING THAT EMPLOYEES ARE PRESENT AND THE WORK IS COMPLETED ON TIME.

A Shift Leader (Healthcare) will be able to:

1. Provide support, leadership and coaching to his subordinates on all areas of their assigned duties;
2. Implement work schedules, assignments, and production sequences, to meet production goals;
3. Maintain operations data and parameters;
4. Assist supervisors to coordinate operations and activities within departments or between departments;
5. Assist in standard achievement and production target based on company objectives, equipment and labour availability.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM 3 or equivalent
- ii. Experience: minimum 2 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 4**

PRODUCTION SUPERVISOR (HEALTHCARE)

A PRODUCTION SUPERVISOR (HEALTHCARE) IS DESIGNATED TO DIRECTLY SUPERVISE AND COORDINATE ACTIVITIES OF PRODUCTION AND OPERATION WORKERS TO ENSURE A SMOOTH AND SAFE OPERATION OF THE PRODUCTION PLANT IN ACHIEVING HIGH PRODUCTIVITY AND QUALITY PRODUCTS ACCORDING TO PRODUCT SPECIFICATION.

A Production Supervisor (Healthcare) will be able to:

1. Supervise and coordinate the activities of employees engaged in production or processing of goods;
2. Implement work schedules, assignments, and production sequences, to meet production goals;
3. Calculate labour and equipment requirements and production specifications, using standard formulas;
4. Supervise standard achievement and production target based on company objectives, equipment and labour availability;
5. Coordinate operations and activities within departments or between departments;
6. Recommend or implement measures to motivate employees and improve production methods, equipment performance, product quality, or efficiency; and
7. Alert/inform maintenance department of any defects and machinery breakdowns.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM 4 or equivalent
- ii. Experience: Minimum 5 years

ANNEX 7.3:

SALES AND MARKETING DIVISION

Annex 7.3.1:

Sales and Marketing (Customer Services)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

CUSTOMER SERVICE ASSISTANT (HEALTHCARE)

A CUSTOMER SERVICE ASSISTANT (HEALTHCARE) PROVIDES CLERICAL DUTIES FOR CUSTOMER SERVICE OR SALES REPRESENTATIVES. CUSTOMER SERVICE ASSISTANTS FILE INVOICES, TYPE REPORTS, MANAGE PHONE CALLS, HANDLE CUSTOMER INQUIRIES AND RESPOND TO EMAIL. SOMETIMES, THE ASSISTANT MIGHT GREET CLIENTS, SCHEDULE APPOINTMENTS, HELP MAKE A SALE, OR PERHAPS FOLLOW UP WITH CUSTOMERS TO MAKE SURE THE PRODUCT OR SERVICE SOLD HAD BEEN DELIVERED AS PROMISED.

A Customer Service Assistant (Healthcare) will be able to:

1. Respond to telephone, mail and face-to-face inquires about the company's products or services following standard procedures;
2. Document details of telephone conversation and actions taken;
3. Complete transactions, records of complaints and actions taken, comments using office software;
4. Field all inquires regarding product, delivery and general services related to customer;
5. Provide for smooth transitions by the coordinating work, schedule and daily processes for optimal efficiency and effectively; and
6. Assist customer to correctly identify issues and determine appropriate priority levels for the executive's response.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

CUSTOMER SERVICE EXECUTIVE (HEALTHCARE)

A CUSTOMER SERVICE EXECUTIVE (HEALTHCARE) IS DESIGNATED TO MANAGE THE INITIAL ENQUIRIES ON PRODUCT AND SERVICES. PROVIDE ADMINISTRATIVE AND DATABASE MANAGEMENT FOR CUSTOMER SERVICE FUNCTIONS.

A Customer Service Executive (Healthcare) will be able to:

1. Support pre and post-sales activities, coordination, account management and relationship building;
2. Explore, identify and develop new opportunities and developing marketing strategies with action plans to penetrate new market segments;
3. Prepare of service quotations and follow up of sales enquiries;
4. Build and maintain effective relationship with customers to increase customer satisfaction and advocacy;
5. Identify issues and provide solution to customers;
6. Assist in selection, training, motivating and evaluating assigned personnel;
7. Provide or coordinate staff training; and
8. Coach employees to correct deficiencies, implements discipline and termination procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum Advance Diploma or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

CUSTOMER SERVICE MANAGER (HEALTHCARE)

A CUSTOMER SERVICE MANAGER (HEALTHCARE) IS DESIGNATED TO MANAGE CUSTOMER SERVICE MANAGEMENT, WORKING CLOSELY WITH THE SUPPLY CHAIN AND FACILITATE INTERNAL AND EXTERNAL COMMUNICATION FOR CUSTOMER SERVICE.

A Customer Service Manager (Healthcare) will be able to:

1. Assume full management responsibility for all departmental services and activities including administration of all customer services functions, recommend and administer policies and procedures;
2. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
3. Establish and appropriate service and staffing levels, monitor and evaluate the efficiency and effectiveness of service delivery methods and procedures; allocate resources accordingly;
4. Plan, direct and coordinate, through subordinate level staff, the customer service Department's work plan, assign projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meet with key staff to identify and resolve problems;
5. Assess and monitor work load, administrative and support systems, and internal reporting relationships, identify opportunities for improvement, direct and implement changes; and
6. Oversee staff and activities of customer service facilities including the Customer Service Center, and Customer Complaint Center, ensure all operations are conducted in accordance with policy and guidelines.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SALES & MARKETING DIRECTOR (HEALTHCARE)

A SALES MARKETING DIRECTOR (HEALTHCARE) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A Sales Marketing Director (Healthcare) will be able to:

1. Direct and coordinate company sales and marketing functions;
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyse and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisites:

- i. Academic Qualification: Possess minimum Master Degree in related field
- ii. Experience: Minimum 10 years

Annex 7.3.2:

Sales and Marketing (Technical Services)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

TECHNICAL SERVICE ASSISTANT (HEALTHCARE)

A TECHNICAL SERVICE ASSISTANT (HEALTHCARE) PROVIDES CLERICAL DUTIES FOR TECHNICAL SERVICE OR SALES REPRESENTATIVES. TECHNICAL SERVICE ASSISTANTS TYPE REPORTS, MANAGE PHONE CALLS, HANDLE TECHNICAL INQUIRIES AND RESPOND TO EMAIL. SOMETIMES, THE ASSISTANT MIGHT GREET CLIENTS, SCHEDULE APPOINTMENTS, HELP MAKE A SALE, OR PERHAPS FOLLOW UP WITH CUSTOMERS TO MAKE SURE THE PRODUCT OR SERVICE SOLD HAD BEEN DELIVERED AS PROMISED.

A technical service assistant (healthcare) will be able to:

1. Respond to telephone, mail and face-to-face inquires about the company's products or services following standard procedures;
2. Document details of telephone conversation and actions taken;
3. Complete transactions, records of complaints and actions taken, comments using office software;
4. Field all inquires regarding product, delivery and general services related to customer;
5. Provide for smooth transitions by the coordinating work, schedule and daily processes for optimal efficiency and effectively; and
6. Assist customer to correctly identify issues and determine appropriate priority levels for the executive's response.

Pre-requisites:

- i. Academic Qualification: Possess minimum Technical certificate in related field



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

TECHNICAL SERVICE EXECUTIVE (HEALTHCARE)

A TECHNICAL SERVICE EXECUTIVE (HEALTHCARE) IS DESIGNATED TO RESPONSIBLE FOR HANDLING THE TECHNICAL SUPPORT FOR NEW OR EXISTING CLIENTS. TECHNICAL EXECUTIVE HAS TO COLLABORATE WITH OTHER TEAMS REGARDING ANY PRODUCT OR SERVICE TECHNICAL ISSUES.

A technical service executive (healthcare) will be able to:

1. Handle customer technical queries and complaint;
2. Perform research and analysis in order to resolve customer issues;
3. Provide technical support in the installation, application, commissioning and after sales trouble shooting related to product or services to customers;
4. Confers with other departments, supplier or vendors in identifying, analyzing and resolving customer issues;
5. Provide technical training presentation and seminar on product safe application at customer's location;
6. Utilise all available tools such as service report, manual, customer feed back and relevant database to improve product or service quality;
7. Develop and maintain highest level of technical knowledge and networking.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field.
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

TECHNICAL SERVICE MANAGER (HEALTHCARE)

A TECHNICAL SERVICE MANAGER (HEALTHCARE) IS DESIGNATED TO PROVIDE TECHNICAL DIRECTION FOR THE DEVELOPMENT, DESIGN, AND SYSTEMS INTEGRATION FOR CLIENT ENGAGEMENT FROM DEFINITION PHASE THROUGH IMPLEMENTATION. HE/SHE MAY APPLY SIGNIFICANT KNOWLEDGE OF INDUSTRY TRENDS AND DEVELOPMENTS TO IMPROVE SERVICE TO OUR CLIENTS. REVIEWS WORK OF DEVELOPMENT TEAM.

A technical service manager (healthcare) will be able to:

1. Responsible for all departmental services and activities including administration of all technical services functions, recommend and administer policies and procedures;
1. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
2. Establish and appropriate service and staffing levels, monitor and evaluate the efficiency and effectiveness of service delivery methods and procedures, allocates resources accordingly;
3. Plan, direct and coordinate, through subordinate level staff, the customer service department's work plan, assign projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meet with key staff to identify and resolve problems;
5. Manage technical support in the installation, application, commissioning and after sales trouble shooting related to product or services to customers;
6. Provide counsel and advice to other departments, supplier or vendors in identifying, analyzing and resolving customer issues;
7. Organise technical training presentation and seminar on product safe application at customer's location; and
8. Develop and maintain highest level of technical knowledge, customer relation and networking.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SALES AND MARKETING DIRECTOR (HEALTHCARE)

A SALES MARKETING DIRECTOR (HEALTHCARE) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A sales marketing director (healthcare) will be able to:

1. Direct and coordinate company sales and marketing functions.
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyse and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisite:

- i. Academic Qualification: Possess minimum Master Degree in related field
- ii. Experience: Minimum 10 years

Annex 7.3.3:

Sales and Marketing
(Marketing)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

MARKETING ASSISTANT (HEALTHCARE)

A MARKETING ASSISTANT (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR SUPPORTING THE DEVELOPMENT AND EXECUTION OF THE MARKETING PLAN AND RESEARCH MARKET CONDITIONS IN LOCAL, REGIONAL, OR NATIONAL AREAS TO DETERMINE POTENTIAL SALES OF A PRODUCT OR SERVICE.

A Marketing Assistant (Healthcare) will be able to:

1. Collate and tabulate market research and conditions in local, regional, or national area for potential sales of product or service analysis;
2. Assist on marketing activities and ensuring the proper use of logos and brand as per guidelines;
3. Establish and maintain a centralised archive of presentations, marketing materials and communications that is accessible to various functional groups internally;
4. Assist in financial responsibilities: estimating, billing, reporting and invoicing for marketing fees and expenses, cooperative advertising requests and documentation;
5. Create and distribute rollout communications for program updates, product enhancements, direct marketing programs and sales tools; and
6. Maintain and update marketing plan flowchart.

Pre-requisites:

- vii. Academic Qualification: Possess minimum SPM or equivalent
- viii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

MARKETING EXECUTIVE (HEALTHCARE)

A MARKETING EXECUTIVE (HEALTHCARE) IS DESIGNATED TO INVOLVE IN DEVELOPING MARKETING CAMPAIGNS THAT PROMOTE A PRODUCT, SERVICE OR IDEA. THE ROLE INCLUDES PLANNING, ADVERTISING, PUBLIC RELATIONS, ORGANISING EVENTS, PRODUCT DEVELOPMENT, DISTRIBUTION, SPONSORSHIP AND RESEARCH.

A Marketing Executive (Healthcare) will be able to:

1. Create marketing plans geared toward end users for each key product within portfolio, in line with strategy and targets and within budget;
2. Examine and analyses statistical data to forecast future marketing trends and to identify potential markets;
3. Work with the business innovations department to develop new ideas for reaching customer's markets;
4. Communicate to rest of marketing team about new innovations and how they can be used to leverage marketing efforts;
5. Assist the manager in managing the product or service branding, communication and promotion; and
6. Assist the manager in managing the company's product or service communicated through media channels.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Marketing
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

MARKETING MANAGER (HEALTHCARE)

A MARKETING MANAGER (HEALTHCARE) IS DESIGNATED TO PLAN, DIRECT, AND COORDINATE ACTIVITIES TO DETERMINE THE DEMAND FOR PRODUCTS AND SERVICES OFFERED AND IDENTIFY POTENTIAL CUSTOMERS. DEVELOP MARKETING AND DISTRIBUTION STRATEGIES WITH THE GOAL OF MAXIMISING PROFITS OR SHARE OF THE MARKET WHILE ENSURING CUSTOMERS ARE SATISFIED. MONITOR TRENDS THAT INDICATE THE NEED FOR NEW PRODUCTS AND SERVICES.

A Marketing Manager (Healthcare) will be able to:

1. Develop marketing strategy, based on knowledge of establishment policy, nature or market, and cost and mark up factors;
2. Establish research methodology and design format for data gathering, such as surveys, opinion polls, or questionnaires;
3. Analyses business developments and consults trade journals to monitor market trends and determine market opportunities for products;
4. Coordinate promotional activities and trade exhibition to market products and services;
5. Plan, direct and coordinate, through subordinate level staff, the customer service Department's work plan, assign projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meet with key staff to identify and resolve problems;
6. Confer with legal staff to resolve problems, such as copyright infringement and royalty sharing with outside producers and distributors;
7. Prepare report of marketing activities; and
8. Assist Sales and Marketing Director in the development and implementation of marketing plans for products.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Marketing
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

SALES AND MARKETING DIRECTOR (HEALTHCARE)

A SALES MARKETING DIRECTOR (HEALTHCARE) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A Sales Marketing Director (Healthcare) will be able to:

1. Direct and coordinate company sales and marketing functions.
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyse and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisites:

- i. Academic Qualification: Possess minimum Master Degree in related field
- ii. Experience: Minimum 10 years

Annex 7.3.4:

Sales and Marketing
(Sales)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

SALES ASSISTANT (HEALTHCARE)

A SALE ASSISTANT (HEALTHCARE) IS DESIGNATED TO PERFORM ACTIVITIES ASSOCIATED WITH SELLING, STOCKING AND ORDERING PRODUCT OR SERVICES IN A RETAIL OR SALES OPERATION.

A Sale Assistant (Healthcare) will be able to:

1. Assist in responding to customer's queries and complaint on product or services;
2. Assist to prepare bidding document, proposal and costing;
3. Check inventory periodically to obtain stock information;
4. Collate and tabulate sales performance through invoices, sales prospect, and sales plan;
5. Provide sales administration duties such as issuance of credit/debit note, invoices, sales order and correspondence; and
6. Maintain cordial connection to customer's representative to maintain sales and receive payment collection.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

SALES EXECUTIVE (HEALTHCARE)

A SALES EXECUTIVE (HEALTHCARE) IS DESIGNATED TO SELL PRODUCTS AND SERVICES TO NEW AND EXISTING CUSTOMERS.THEY ARE ALSO INVOLVED WITH IDENTIFYING NEW MARKETS AND BUSINESS OPPORTUNITIES.

A Sale Executive (Healthcare) will be able to:

1. Implement sale strategies for products and services;
2. Build goodwill and strong relationship with customer by maintaining regular visits and contact;
3. Prepare quotation and follow up with customer to secure order and advice customer on selection of product or service;
4. Responsible for customer's satisfaction level and customer's audit;
5. Deliver presentations of products at customer sites and at conferences and exhibitions;
6. Maintain contact with existing and potential customers to promote sales and deliver detailed account plans; and
7. Observe customer feed back and complaint on product quality and delivery.

Pre-requisite:

- i. Academic Qualification: Possess minimum Degree in Sales and Marketing or related field
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY LEVEL 6

SALES MANAGER (HEALTHCARE)

A SALES MANAGER (HEALTHCARE) IS DESIGNATED TO PLAN, DIRECT, AND COORDINATE SALES ACTIVITIES BY ESTABLISHING SALES TERRITORIES, QUOTAS, GOALS, AND TRAINING PROGRAMS FOR SALES REPRESENTATIVES. ANALYSE SALES STATISTICS TO DETERMINE SALES POTENTIAL, INVENTORY REQUIREMENTS AND CUSTOMER PREFERENCES.

A Sale Manager (Healthcare) will be able to:

1. Responsible for all departmental services and activities including administration of all customer services functions, recommend and administer policies and procedures;
2. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
3. Plan, direct and coordinate, through subordinate level staff, the customer service department's work plan, assign projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meet with key staff to identify and resolve problems;
4. Plan and priorities sales activities and customer/prospect contact towards achieving targeted business plan;
5. Manage business portfolio, product, services and sales territory according to market strategy, pricing, margin and profit target;
6. Monitor and report on market and competitor's activities and provide relevant report and market information; and
7. Manage collection of outstanding debts according to agreed credit terms.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in in Sales and Marketing or related field
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SALES AND MARKETING DIRECTOR (HEALTHCARE)

A SALES MARKETING DIRECTOR (HEALTHCARE) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A Sales Marketing Director (Healthcare) will be able to:

1. Direct and coordinate company sales and marketing functions.
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyse and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisites:

- i. Academic Qualification: Possess minimum Master Degree in Sales & Marketing or related field
- ii. Experience: Minimum 10 years

ANNEX 7.4:

**LOGISTICS AND
WAREHOUSING DIVISION**

Annex 7.4.1:

Logistics and Warehousing
(Logistic)



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 1**

STORE HANDLER (HEALTHCARE)

A STORE HANDLER (HEALTHCARE) IS DESIGNATED TO RECEIVE, STORE, HANDLE AND DELIVER MATERIALS, EQUIPMENT AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Store Handler (Healthcare) will be able to:

1. Receive, count, deliver and store materials and equipments to designated area, and determine sequence and release of back orders according to stock availability;
2. Record nature, quantity, value, or location of material, supplies, or equipment received, shipped, used, or issued to workers;
3. Clean and maintain supplies, tools, equipments and instruments and storage areas to ensure compliance to safety regulations;
4. Apply labels or stickers to finished goods for distribution or export; and
5. Check specifications prior to delivery and receiving materials and equipments.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM Certificate or equivalent
- ii. Basic Command in English and Malay Language



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

FORKLIFT DRIVER (HEALTHCARE)

A FORKLIFT DRIVER (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE IN MOVING MATERIALS OR EQUIPMENT TO MEET JOB ORDER.

A Forklift Driver (Healthcare) will be able to:

1. Perform stuffing and unstuff from truck or containers;
2. Transport material and equipment for storage purpose;
3. Inspect forklift regularly according to the Occupational Safety and Health;
4. Stack, arrange and retrieve material or equipment at storage area; and
5. Prepare pallets or materials to put on trucks or containers for delivery based on order form.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Not necessary
- iii. Possess valid driving licenses for forklift operation



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

STOREKEEPER (HEALTHCARE)

A STOREKEEPER (HEALTHCARE) IS DESIGNATED TO COORDINATE ACTIVITIES INVOLVED IN RECEIVING, STORAGE, AND ISSUE MATERIALS, EQUIPMENT, AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Storekeeper (Healthcare) will be able to:

1. Prepare periodic, special, or perpetual inventory of stock;
2. Maintain the storage area according to Standard Operation Procedure (SOP);
3. Receive and inspect all incoming materials and reconciles with delivery order (DO);
4. Supervise and organise his/her subordinate based on their work order;
5. Maintain, update and key in inventories, loading and unloading into material requirement planning system; and
6. Compare records with sales orders, invoices, or requisitions to verify accuracy and receipt of items.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

LOGISTIC ASSISTANT (HEALTHCARE)

A LOGISTIC ASSISTANT (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE IN PREPARING DOCUMENTATION AND ADMINISTRATIVE FUNCTION FOR SHIPPING AND CUSTOM CLEARANCE.

A Logistic Assistant (Healthcare) will be able to:

1. Prepare shipping documentation such as packing details, invoices and bar coding;
2. Prepare documentation for custom clearance relating to import or export of good or equipment;
3. To coordinate with personnel from warehouse logistic provider and shipping agents to ensure on time delivery;
4. Prepare shipment documentation to ensure all shipment arrived and delivered in timely manner;
5. Carry out supporting activities in all level of time management for shipping activities in order to ensure smooth transition;
6. Handle all customers' needs for transportation order, quotation and any project cargo requirements and specification;
7. Respond to custom exemption application and renewal of licenses;
8. Interact with suppliers in customers regarding shipping problems or enquiries; and
9. Handle import/export shipment, custom clearance and provide logistic support.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Logistics
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

LOGISTIC EXECUTIVE (HEALTHCARE)

A LOGISTIC EXECUTIVE (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE IN PLANNING, COORDINATING, IMPLEMENTING AND MANAGING ON LOGISTIC AND TRANSPORTATION ACTIVITIES.

A Logistic Executive (Healthcare) will be able to:

1. Monitor and manage vendor's performance to ensure all shipments arrive and delivered in timely manner;
2. Closely monitor on monthly closing and billing process;
3. Monitor all customers' need for transportation order, quotation and any project cargo requirement and specification;
4. Prepare reports for monthly management analysis;
5. Ensure continuous improvement for system to increase efficiency and effectiveness of operation; and
6. Monitor supplier and rate their performance.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Logistics
- ii. Basic Command in English and Malay Language
- iii. Proficient in Office software
- iv. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

LOGISTIC MANAGER (HEALTHCARE)

A LOGISTIC MANAGER (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR THE MANAGEMENT OF LOGISTICS SERVICE BY PROVIDING LEADERSHIP, FOCUSING ON CUSTOMER REQUIREMENTS, EFFECTIVE OPERATIONAL PERFORMANCE AND A MOTIVATED WORKFORCE.

A Logistic Manager (Healthcare) will be able to:

1. To maximise performance of the logistics service by providing leadership, focusing on customer requirements, effective operational performance and a motivated workforce;
2. Support the profitable growth of the business through efficient management of logistics service achieving customer satisfaction;
3. Liaise with customers, customer service and sales staff to understand customer logistics requirements through analysis of performance, customer feedback and complaint;
4. Adhere to the transportation and customs requirements of country, regional and company's corporate policy directives at all times;
5. Develop and carry-out training programs that support the development of personnel of logistics;
6. Monitor logistics cost and expenditure to ensure costs efficiency in operations management;
7. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
8. Establish appropriate service and staffing levels, monitor and evaluate the efficiency and effectiveness of service delivery methods and procedures, allocate resources accordingly; and
9. Plan, direct and coordinate, through subordinate level staff, the Warehouse Department's work plan, assign projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meet with key staff to identify and resolve problems.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Logistic
- ii. Experience: Minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SUPPLY CHAIN DIRECTOR (HEALTHCARE)

A SUPPLY CHAIN DIRECTOR (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR THE DEVELOPMENT AND IMPLEMENTATION OF SUPPLY CHAIN STRATEGIES TO MEET BUSINESS TARGET.

A Supply Chain Director (Healthcare) will be able to:

1. Lead logistics, warehousing and purchasing functions of the organisation;
2. Train Supply Chain personnel on Strategic Sourcing and delivery processes to ensure compliance;
3. Ensure that all necessary purchasing parameters (vendor data, contracts) are given and stored properly and take appropriate actions whenever necessary;
4. Prepare analysis and statistics to control and support the strategy for sourcing and delivery strategy and the strategic planning;
5. Ensure the availability of up to date supply market information;
6. Ensure the establishment of a competitive supply chain which provides sustainable reductions of total cost and integrates seamless into the purchasing and production (assembly) processes;
7. Search, select and qualify preferred suppliers to support the business requirements.
8. Proactive improvement of the quality along the entire supply chain; and
9. Create and maintain global contract system, create and execute competence development plans.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field

Annex 7.4.2:

Logistics and Warehousing (Warehouse)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

STORE HANDLER (HEALTHCARE)

A STORE HANDLER (HEALTHCARE) IS DESIGNATED TO RECEIVE, STORE, HANDLE AND DELIVER MATERIALS, EQUIPMENT AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Store Handler (Healthcare) will be able to:

1. Receive, count, deliver and store materials and equipments to designated area, and determine sequence and release of back orders according to stock availability;
2. Record nature, quantity, value, or location of material, supplies, or equipment received, shipped, used, or issued to workers;
3. Clean and maintain supplies, tools, equipments and instruments and storage areas to ensure compliance to safety regulations;
4. Apply labels or stickers to finished goods for distribution or export; and
5. Check specifications prior to delivery and receiving materials and equipments.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM Certificate equivalent



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

FORKLIFT DRIVER (HEALTHCARE)

A FORKLIFT DRIVER (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE IN MOVING MATERIALS OR EQUIPMENT MEETING JOB ORDER.

A Forklift Driver (Healthcare) will be able to:

1. Perform stuffing and unstuffing from truck or containers;
2. Transport material and equipment for storage purpose;
3. Inspect forklift regularly according to the Occupational Safety and Health;
4. Stack, arrange and retrieve material or equipment at storage area; and
5. Prepare pallets or materials to put on trucks or containers for delivery based on order form.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Not necessary
- iii. Possess valid driving licenses for forklift operation



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

STOREKEEPER (HEALTHCARE)

A STOREKEEPER (HEALTHCARE) IS DESIGNATED TO COORDINATE ACTIVITIES INVOLVED IN RECEIVING, STORAGE, AND ISSUE MATERIALS, EQUIPMENT, AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Storekeeper (Healthcare) will be able to:

1. Prepare periodic, special, or perpetual inventory of stock;
2. Maintain the storage area according to Standard Operation Procedure (SOP);
3. Receive and inspect all incoming materials and reconciles with delivery order (DO);
4. Supervise and organise his/her subordinate based on their work order;
5. Maintain, update and key in inventories, loading and unloading into material requirement planning system; and
6. Compare records with sales orders, invoices, or requisitions to verify accuracy and receipt of items.

Pre-requisites:

- i. Academic Qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

WAREHOUSE SUPERVISOR (HEALTHCARE)

A WAREHOUSE SUPERVISOR (HEALTHCARE) IS DESIGNATED TO SUPERVISE AND COORDINATE ACTIVITIES OF WORKERS ENGAGED IN RECEIVING, TRANSPORTING, STACKING, ORDER FILLING, SHIPPING, AND MAINTAINING STOCK RECORDS IN WAREHOUSE.

A Warehouse Supervisor (Healthcare) will be able to:

1. Supervise and coordinate activities of workers engaged in receiving, transporting, stacking, order filling, shipping, and maintaining stock records in warehouse;
2. Complete warehouse operational requirements by scheduling and assigning employees, following up on work results;
3. Control inventory levels by reviewing data recorded in tracking system, retrieving data, designing reports and directing corrective actions occur to manage the inventory levels;
4. Maintain professional and technical knowledge of staff by consulting with workers, managers and suppliers to ensure the procedures are maintained;
5. Maintain historical record keeping by tracing historical records of items to determine reasons for discrepancies between inventory and stock control records; and
6. Provide support to departmental staff by researching and resolving discrepancies, recommending remedial actions to manage inventory levels, and disbursement of inventory.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

WAREHOUSE EXECUTIVE (HEALTHCARE)

A WAREHOUSE EXECUTIVE (HEALTHCARE) IS DESIGNATED TO ASSIST THE WAREHOUSE MANAGER IN OVERSEING THE DAILY OPERATION OF THE WAREHOUSE, INCOMING, STORAGE AND OUTGOING ACTIVITES BY ADHERING TO FIRST IN FIRST OUT (FIFO) PRINCIPLE.

A Warehouse Executive (Healthcare) will be able to:

1. Assist in the management of raw materials inventory; finished goods, production material movement on time and accurately;
2. Plan, monitor and manage the inventory of stock item include store layout and inventory control;
3. Ensure proper arrangement and storage of inventory stock through Good Storage Practice (GSP);
4. Implement store procedures control system to ensure smooth flow of materials;
5. Analyse and solve problems on stock discrepancies;
6. Improve on warehouse operation effectiveness and efficiency;
7. Co-ordinate warehouse activities by overseeing receiving, storage, picking and packing;
8. Ensure shipments of correct orders and quantities reach destination in timely manner;
9. Ensure all warehouse facilities, equipments are properly maintained and comply with safety requirement; and
10. Responsible for conducting stock checks, variance investigation and reconciliations.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Logistic or related field
- ii. Experience: minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

WAREHOUSE MANAGER (HEALTHCARE)

A WAREHOUSE MANAGER (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR THE EFFICIENT OPERATION AND CONTINUES IMPROVEMENT OF THE WAREHOUSING AND DISTRIBUTION OPERATION TO MEET BUSINESS REQUIREMENT.

A Warehouse Manager (Healthcare) will be able to:

1. Plan, develop, organise and deploy resources to optimise warehousing and distribution activities;
2. Ensure stock accuracy and credibility by conducting regular stock check;
3. Ensure the availability of all documents pertaining to movement of raw material to finish product and the consumption throughout the operation;
4. Ensure proper arrangement and storage of inventory stock through Good Storage Practice (GSP);
5. Ensure compliance of good housekeeping and safety standard;
6. Analyzing data to monitor performance and plan improvement;
7. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
8. Establish and appropriate service and staffing levels, monitors and evaluates the efficiency and effectiveness of service delivery methods and procedures, allocates resources accordingly;
9. Plan, direct and coordinate, through subordinate level staff of Warehouse Department's;
10. Review and evaluate work methods and procedures; and
11. Meet with key staff to identify and resolve problems.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Logistic or related field
- ii. Experience: Minimum 10 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

SUPPLY CHAIN DIRECTOR (HEALTHCARE)

A SUPPLY CHAIN DIRECTOR (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR THE DEVELOPMENT AND IMPLEMENTATION OF SUPPLY CHAIN STRATEGIES TO MEET BUSINESS TARGET.

A Supply Chain Director (Healthcare) will be able to:

1. Lead Logistics, Warehousing and purchasing functions of the organisation;
2. Train Supply Chain personnel on Strategic Sourcing and delivery processes to ensure compliance;
3. Ensure that all necessary purchasing parameters (vendor data, contracts) are given and stored properly and take appropriate actions whenever necessary;
4. Prepare analysis and statistics to control and support the strategy for sourcing and delivery strategy and the strategic planning;
5. Ensure the availability of up to date supply market information;
6. Ensure the establishment of a competitive supply chain which provides sustainable reductions of total cost and integrates seamless into the purchasing and production (assembly) processes;
7. Search, select and qualify preferred suppliers to support the business requirements.
8. Proactive improvement of the quality along the entire supply chain; and
9. Create and maintain global contract system, create and execute competence development plans.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Logistic or related field
- ii. Experience: Minimum 10 years

ANNEX 7.5:

QUALITY ASSURANCE/ QUALITY CONTROL/ QUALITY MANAGEMENT (QA/QC/QM) DIVISION

Annex 7.5.1:

QA/QC/QM
(Quality Assurance)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

QUALITY ASSURANCE ASSISTANT (HEALTHCARE)

A QUALITY ASSURANCE ASSISTANT (HEALTHCARE) IS DESIGNATED TO PERFORM RESPONSIBLE FOR THE QUALITY TESTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING AS PER SPECIFICATION AND PARAMETERS RELATED TO THE REVIEW AND APPROVAL OF PRODUCTS OR MATERIAL IN STRICT ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, CURRENT GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES, AND REGULATORY REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance Assistant (Healthcare) will be able to:

1. Carry-out daily Quality Assurance testing for in-coming, in-process and finished goods as per specification and parameters;
2. Record all test and analysis using written log or specific programme and software;
3. Ensure all test, monitoring and measuring equipment are in good condition and calibrated;
4. Assist in conducting audit for process or quality management system;
5. Analyse product quality defect through investigation, test and trial; and
6. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre-requisites:

- i. Qualification : Min Diploma in related field
- ii. Experience : Not necessary



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

QUALITY ASSURANCE EXECUTIVE (HEALTHCARE)

A QUALITY ASSURANCE EXECUTIVE (HEALTHCARE) IS DESIGNATED TO PERFORM RESPONSIBLE TO WORK TOGETHER WITH QUALITY ASSURANCE TEAM RELATED TO THE REVIEW AND APPROVAL OF PRODUCTS OR MATERIAL IN STRICT ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, CURRENT GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES, AND REGULATORY REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance Executive (Healthcare) will be able to:

1. Coordinate and organise the daily activities of the Quality Assurance Departments and assigned staff in accordance with the organisation's policies, procedures and legal requirements;
2. Assist in providing QA input during design and development phases to ensure all requirements are properly documented;
3. Assist in responding to Quality Assurance-related inquiries/complaint from management, customers, suppliers and regulatory agencies;
4. Perform and document investigations, corrective and preventative actions; tracking; trending; and maintenance of historical files;
5. Perform material review activities; identification, investigation, and closeout of manufacturing non-conformances;
6. Analyse and review manufacturing deviations;
7. Organise personnel training for ensuring documented training records in an orderly manner that facilitates easy retrieval and review;
8. Organise production materials testing for acceptability in accordance with written procedures.
9. Performs internal and external quality audits;
10. Participate in finalise inspections and audits to ensure compliance with GMPs, SOPs, company practices and procedures and governmental regulations, including safety rules and regulations; and
11. Assist in preparing periodic reports for business and management.

Pre-requisites:

- i. Qualification : Minimum Degree in related field
- ii. Experience : Not necessary



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

QUALITY ASSURANCE MANAGER (HEALTHCARE)

A QUALITY ASSURANCE MANAGER (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR ALL OPERATIONAL ASPECTS OF THE QUALITY ASSURANCE DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT—SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance Manager (Healthcare) will be able to:

1. Lead, manage, coordinate and prioritise the daily activities of the Quality Assurance Departments and assigned staff in accordance with the organisation's policies, procedures and legal requirements;
2. Establish and maintain the Quality Management System or other applicable standards;
3. Conduct internal and external quality audit to ensure company and supplier operations comply with standard;
4. Guide the operations team for all quality matters, e.g. preparing work instructions, reviewing quality records, etc;
5. Develop, implement and maintain the Quality Management Plan;
6. Work closely with the purchasing section to evaluate and qualify vendors;
7. Assess customer's complaints and recommend corrective action;
8. Manage customer and certification audits;
9. Drive Continuous Improvement projects/initiatives for the organisation;
10. Ensure that all personnel are adequately trained, and where required, certified;
11. Ensure that training is appropriately documented training records in an orderly manner that facilitates easy retrieval and review; and
12. Prepare periodic reports for business and management.

Pre-requisites:

- i. Qualification : Minimum Degree in related field
- ii. Experience : Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT DIRECTOR (HEALTHCARE)

QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT DIRECTOR (HEALTHCARE) IS DESIGNATED TO DIRECT, LEAD AND FOR ALL OPERATIONAL ASPECTS OF THE QUALITY MANAGEMENT DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance/Quality Control/Quality Management Director (Healthcare) will be able to:

1. Direct, lead and coordinate company's Quality Assurance, Quality Control and Quality Management plans, systems and activities;
2. Responsible for all product quality issues, including managing internal and external communication on product qualities;
3. Identifies on-going quality issues and makes recommendations to improve current processes;
4. Interfaces with customers, suppliers, engineering and manufacturing groups on quality related issues;
5. Provides training in statistical concepts and techniques;
6. Establish, review & approve quality control methods and procedures;
7. Collaborate with other departments to ensure the establishment of comprehensive quality specifications of current and new products with due compliance to established parameters;
8. Oversee vendor rating to ensure that vendors are sufficiently competent to provide quality products and that are produced under a controlled Quality Control systems; and
9. Advise in development of business systems and processes beyond product and services quality.

Pre-requisites:

- i. Qualification : Minimum Masters Degree in related field
- ii. Experience : Minimum 10 years

Annex 7.5.2:

QA/QC/QM
(Quality Control)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

QUALITY CONTROL INSPECTOR (HEALTHCARE)

A QUALITY CONTROL INSPECTOR (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR THE PHYSICAL INSPECTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING QUALITY TESTING AS PER SPECIFICATION AND PARAMETERS.

A Quality Control Inspector (Healthcare) will be able to:

1. Collect material sample for daily in-coming, in-process, finished goods and outgoing quality testing as per physical specification and parameters;
2. Ensure of effective use of all inspection and measuring equipments;
3. Ensure proper reporting and filing of inspection and testing results/data;
4. Report any off-specification immediately to superior; and
5. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre – requisites:

- i. Qualification : Minimum SPM certificate
- ii. Experience : Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

QUALITY CONTROL TECHNICIAN (HEALTHCARE)

A QUALITY CONTROL TECHNICIAN (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR THE INSPECTION OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING QUALITY TESTING AS PER SPECIFICATION AND PARAMETERS. CONDUCT MINOR TROUBLESHOOTING FOR EQUIPMENT AND MATERIAL.

A Quality Control Technician (Healthcare) will be able to:

1. Collect material sample for daily in-coming, in-process, finished goods and outgoing quality testing as per specification and parameters;
2. Ensure of effective use of all inspection and measuring equipments in quality control room;
3. Ensure proper reporting and filing of inspection and testing results/data;
4. Perform initial analysis on test and inspected activities and to report any off-specification immediately to superior;
5. Perform minor troubleshooting for off-specification material with guidance from QC Executive; and
6. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre-requisites:

- i. Qualification : Minimum Certificate in Science or related fields
- ii. Experience : Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

QUALITY CONTROL ASSISTANT (HEALTHCARE)

A QUALITY CONTROL ASSISTANT (HEALTHCARE) IS DESIGNATED TO PERFORM RESPONSIBLE FOR INSPECTING AND ANALYSIS OF QUALITY TESTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING AS PER SPECIFICATION AND PARAMETERS IN STRICT ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, CURRENT GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES, AND REGULATORY REQUIREMENTS WHEREVER APPLICABLE.

A Quality Control Assistant (Healthcare) will be able to:

1. Carry-out daily Quality Control testing for in-coming, in-process and finished goods as per specification and parameters;
2. Record all test and analysis using written log or specific programme and software ;
3. Ensure all test, monitoring and measuring equipment are in good condition and calibrated;
4. Assist in conducting audit for process or quality management system;
5. Analyse product quality defect through investigation, test and trial; and
6. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre-requisites:

- i. Qualification: Minimum Diploma in related fields
- ii. Experience: minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

QUALITY CONTROL EXECUTIVE (HEALTHCARE)

A QUALITY CONTROL EXECUTIVE (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE TO LEAD THE QUALITY CONTROL TEAM IN INSPECTING AND ANALYSING QUALITY TESTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING AS PER SPECIFICATION AND PARAMETERS.

A Quality Control Executive (Healthcare) will be able to:

1. Supervise and monitor QC Assistants performance on daily Quality Control testing for in-coming, in-process and finished goods as per specification and parameters;
2. Review all test and analysis through physical log or specific programme and software;
3. Review calibration and maintenance of all test, monitoring and measuring equipment are in good condition and calibrated;
4. Conduct audit for process or quality management system;
5. Review analysis of product quality defect investigation, test and trial;
6. Provide technical training to QC team regarding QC tools, equipment, investigation, test and trial method;
7. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination;
8. Conduct quality system audits to ensure the effectiveness of quality system;
9. Provide technical training to management and employees regarding the adequacy of safety program, operational methods and personnel practices, maintenance of safety and cleanliness practices and GMP requirement;
10. Conduct customer complaint investigation to resolve root cause of non-conformance;
11. Participate in validation activities in support of continuous improvement programs; and
12. Prepare written document such as work Instruction, specification, test method, sampling plan forms, etc which may impact product quality and safety and initiate periodic review of those documents.

Pre-requisites:

- i. Qualification : Minimum Degree in related field
- ii. Experience : Not necessary



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

**QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT
DIRECTOR (HEALTHCARE)**

QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT DIRECTOR (HEALTHCARE) IS DESIGNATED TO DIRECT, LEAD AND FOR ALL OPERATIONAL ASPECTS OF THE QUALITY MANAGEMENT DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance/Quality Control/Quality Management Director (Healthcare) will be able to:

1. Direct, lead and coordinate company's Quality Assurance, Quality Control and Quality Management plans, systems and activities;
2. Responsible for all product quality issues, including managing internal and external communication on product qualities;
3. Identifies on-going quality issues and makes recommendations to improve current processes;
4. Interfaces with customers, suppliers, engineering and manufacturing groups on quality related issues;
5. Provides training in statistical concepts and techniques;
6. Establish, review & approve quality control methods and procedures;
7. Collaborate with other departments to ensure the establishment of comprehensive quality specifications of current and new products with due compliance to established parameters;
8. Oversee vendor rating to ensure that vendors are sufficiently competent to provide quality products and that are produced under a controlled Quality Control systems; and
9. Advise in development of business systems and processes beyond product and services quality.

Pre-requisites:

- i. Qualification : Minimum Masters Degree in related field
- ii. Experience : Minimum 10 years

Pre-requisites:

- i. Qualification : Minimum Degree in related fields
- ii. Experience : Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

**QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT
DIRECTOR (HEALTHCARE)**

A QUALITY ASSURANCE/QUALITY CONTROL/QUALITY MANAGEMENT DIRECTOR (HEALTHCARE) IS DESIGNATED TO DIRECT, LEAD AND FOR ALL OPERATIONAL ASPECTS OF THE QUALITY MANAGEMENT DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance/Quality Control/Quality Management Director (Healthcare) will be able to:

10. Direct, lead and coordinate company's Quality Assurance, Quality Control and Quality Management plans, systems and activities;
11. Responsible for all product quality issues, including managing internal and external communication on product qualities;
12. Identifies on-going quality issues and make recommendations to improve current processes;
13. Interfaces with customers, suppliers, engineering and manufacturing groups on quality related issues;
14. Provides training in statistical concepts and techniques;
15. Establish, review and approve quality control methods and procedures;
16. Collaborate with other departments to ensure the establishment of comprehensive quality specifications of current and new products with due compliance to established parameters;
17. Oversee vendor rating to ensure that vendors are sufficiently competent to provide quality products and that are produced under a controlled Quality Control systems; and
18. Advise in development of business systems and processes beyond product and services quality.

Pre-requisites:

- iii. Qualification : Minimum Masters Degree in related fields
- iv. Experience : Minimum 10 years

Annex 7.5.3:

QA/QC/QM
(Quality Management)



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

DOCUMENT CONTROLLER (HEALTHCARE)

A DOCUMENT CONTROLLER (HEALTHCARE) IS DESIGNATED TO MANAGE DOCUMENTS OF AN ORGANISATION FOR A PROJECT OR WHOLE ORGANISATION TO A MUCH HIGHER DEGREE OF RELIABILITY FOR SECURITY, VERSION, VISIBILITY, AVAILABILITY AND, MOST IMPORTANTLY, WITH A CONTROLLED RELIABLE AUDIT TRAIL.

A Document Controller (Healthcare) will be able to:

1. Follow the document or numbering policy of the company;
2. Follow the company procedure and a clear understanding of the company document moment system;
3. Implement processes and tools, providing system reports;
4. Maintain and update electronic information systems, distributing documents, and ensuring accuracy of all documentation are all essential functions of a document controller;
5. Ensure regulatory procedures and changes are followed is also an essential part of the job junction;
6. Ensure that all corporate documents are well checked and submitted on time prior to the documents submission due date;
7. Perform regular audit on corporate documents in order to ensure that all documents are properly submitted to other departments;
8. Ensure that all documents have no errors in filenames, submissions, etc before submitting it to the nest department to avoid confusion; and
9. Prepare of all documents and communicating with employees in order to make submissions early is part of the job description of a document controller.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

QUALITY MANAGEMENT MANAGER (HEALTHCARE)

A QUALITY MANAGEMENT MANAGER (HEALTHCARE) IS DESIGNATED TO MONITOR AND ADVISE ON THE PERFORMANCE OF THE QUALITY MANAGEMENT SYSTEM AND PRODUCE DATA AND REPORT ON PERFORMANCE, MEASURING AGAINST SET INDICATORS.

A Quality Management Manager (Healthcare) will be able to:

1. Focus not only on product or service quality, but also the means to achieve it;
2. Promote quality achievement and performance improvement throughout the organisation;
3. Maintain awareness of the business context and company profitability, including budgetary control issues;
4. Work with purchasing staff to establish quality requirements from external suppliers;
5. Ensure compliance with national and international standards and legislation;
6. Consider the application of environmental and health and safety standards;
7. Define quality procedures in conjunction with operating staff;
8. Set up and maintain controls and documentation procedures;
9. Supervise technical staff in carrying out tests and checks;
10. Prepare clear explanatory documents such as customers' charters; and
11. Monitor performance by gathering relevant data and producing statistical reports.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 5-10 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

**QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT
DIRECTOR (HEALTHCARE)**

A QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT DIRECTOR (HEALTHCARE) IS DESIGNATED TO DIRECT, LEAD AND FOR ALL OPERATIONAL ASPECTS OF THE QUALITY MANAGEMENT DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance/Quality Control/Quality Management Director (Healthcare) will be able to:

1. Direct, lead and coordinate company's Quality Assurance, Quality Control and Quality Management plans, systems and activities;
2. Responsible for all product quality issues, including managing internal and external communication on product qualities;
3. Identifies on-going quality issues and make recommendations to improve current processes;
4. Interface with customers, suppliers, engineering and manufacturing groups on quality related issues;
5. Provide training in statistical concepts and techniques;
6. Establish, review and approve quality control methods and procedures;
7. Collaborate with other departments to ensure the establishment of comprehensive quality specifications of current and new products with due compliance to established parameters;
8. Oversee vendor rating to ensure that vendors are sufficiently competent to provide quality products and that are produced under a controlled Quality Control systems; and
9. Advise in development of business systems and processes beyond product and services quality.

Pre-requisites:

- i. Qualification : Minimum Masters Degree in related field
- ii. Experience : Minimum 10 years

ANNEX 7.6:

HEALTH, SAFETY AND ENVIRONMENT (HSE) DIVISION

Annex 7.6.1:

HSE
(Environment)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

WASTE TREATMENT ASSISTANT (HEALTHCARE)

A WASTE TREATMENT ASSISTANT (HEALTHCARE) IS DESIGNATED TO BE INVOLVED IN OPERATING, MAINTAINING, MONITORING, AND ADJUSTING OR WASTEWATER TREATMENT PLANTS, BOOSTER OR SEWAGE PUMPING STATION EQUIPMENT IN ORDER TO ENSURE COMPLIANCE WITH GOVERNMENT LAWS, REGULATIONS AND POLICIES.

A Waste Treatment Assistant (Healthcare) will be able to:

1. Conduct sampling duties in compliance with state and federal regulations;
2. Conduct a variety of process tests;
3. Monitor sludge levels in process tanks;
4. Clean service area equipment such as process floats, tanks, weirs, walls scum collectors, cascades, and distribution boxes;
5. Assist with mechanical preventative and corrective maintenance of process equipment, valves, and structures at treatment plants, and sewage pumping station, and water booster stations;
6. Conduct instrumentation and electrical corrective preventative maintenance;
7. Conduct service area equipment and plant vehicles preventative maintenance;
8. Conduct general housekeeping, buildings and ground maintenance at treatment plants, pump or booster stations; and
9. Perform related duties as required.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM Level 2 in related field.
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

WASTE TREATMENT TECHNICIAN (HEALTHCARE)

A WASTE TREATMENT TECHNICIAN (HEALTHCARE) IS DESIGNATED TO APPLY THEORY AND PRINCIPLES OF ENVIRONMENTAL ENGINEERING TO MODIFY, TEST, AND OPERATE EQUIPMENT AND DEVICES USED IN THE PREVENTION, CONTROL, AND REMEDIATION OF ENVIRONMENTAL POLLUTION, INCLUDING WASTE TREATMENT AND SITE REMEDIATION. MAY ASSIST IN THE DEVELOPMENT OF ENVIRONMENTAL POLLUTION REMEDIATION DEVICES UNDER DIRECTION OF SUPERIOR.

A Waste Treatment Technician (Healthcare) will be able to:

1. Operate equipment used for filtering sludge to separate liquids from solids.
2. Performs routine inspections, start-up and shutdown procedures and emergency operations.
3. Ensure that filter-pressed material is properly prepared for transportation to a landfill or another designated area
4. Track and record all of the essential production data.
5. Handle and direct the handling of chemicals for the line and for pollution control; and
6. Ensure proper functioning of the wastewater treatment system by maintaining the proper ph levels in process tanks to comply with all environmental regulations.

Pre-requisites:

- i. Academic Qualification: Possess minimum certificate in related field.
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

WASTE TREATMENT SUPERVISOR (HEALTHCARE)

A WASTE TREATMENT SUPERVISOR (HEALTHCARE) IS DESIGNATED TO SUPERVISE THE WASTE TREATMENT ACTIVITIES.

A Waste Treatment Supervisor (Healthcare) will be able to:

1. Maintain effective communication with county departments and staff to facilitate and ensure adherence to policies and procedures;
2. Supervise and coordinate activities of a designated unit; determine work procedures, prepare work schedules and determine methods for expediting workflow; assign, review and approve the work of subordinate staff;
3. Oversee the Sludge Management Program in compliance with local, state and federal regulations;
4. Obtain permits, submit tests and reports, attend public meetings and coordinate sludge hauling and contracted acceptance;
5. Prepare and administer annual budget for the laboratory, pre-treatment program, sludge hauling and for contracted sludge utilisation;
6. Establish and implement policies, plans, procedures and standards for the efficient and effective operation and maintenance of the laboratory;
7. Provide planning leadership and direction and develops short and long range plans; develop and prepare data for reports and recommendations;
8. Analyse needs and recommend improvements to the existing laboratory; and
9. Ensure that managers, appropriate personnel and agencies are apprised of laboratory test results, pre-treatment activities and sludge issues by submitting technical reports and updates.

Pre-requisites:

- i. Academic Qualification: Possess minimum diploma in related field.
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

ENVIRONMENTAL EXECUTIVE (HEALTHCARE)

AN ENVIRONMENTAL EXECUTIVE (HEALTHCARE) IS DESIGNATED TO MONITOR DEVELOPMENTS AND ENSURE COMPANY COMPLIANCES AT ALL TIMES WITH APPLICABLE LEGAL REQUIREMENTS ON ENVIRONMENTAL MATTERS WITH RESPECT TO OSH ACT, FACTORY MACHINERY ACT, AND ENVIRONMENTAL QUALITY ACT AND RELATED ACTS

An Environmental Executive (Healthcare) will be able to:

1. Assist Section/Department Heads maintaining an environmental compliance working condition;
2. Ensure all processing activities adhering to the respective approved environmental compliance operating procedure;
3. Initiate and coordinate all environmental awareness activities and training;
4. Evaluate and approve Environmental Analysis;
5. Prepare and submit all relevant reports to DOE and other relevant environmental related local authorities as required;
6. Manage all waste disposal and waste recycling activities;
7. Maintain records on all waste disposal quantity and quality;
8. Maintain a list of current approved waste disposal contractors;
9. Maintain the waste disposal agreements/contracts; and
10. Conduct Environmental Audits where required.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Environmental or equivalent
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

ENVIRONMENTAL MANAGER (HEALTHCARE)

AN ENVIRONMENTAL MANAGER (HEALTHCARE) IS RESPONSIBLE FOR EXAMINING CORPORATE ACTIVITIES TO ESTABLISH WHERE IMPROVEMENTS CAN BE MADE AND ENSURE COMPLIANCE WITH ENVIRONMENTAL LEGISLATION ACROSS THE ORGANISATION.

An Environmental Manager (Healthcare) will be able to:

1. Develop and implement environmental strategies and action plans that ensure corporate sustainable development;
2. Lead on sustainable procurement for all goods and services;
3. Coordinate all aspects of pollution control, waste management, recycling, environmental health, conservation and renewable energy;
4. Lead the implementation of environmental policies and practices;
5. Ensure compliance with environmental legislation;
6. Carry out impact assessments to identify, assess and reduce an organisation's environmental risks and financial costs;
7. Promote and raise awareness, at all levels of an organisation, of the impact of emerging environmental issues, whether legislative or best practice, on corporate, ethical and social responsibility;
8. Manage the development and implementation of an environmental management system; and
9. Train staff at all levels in environmental issues and responsibilities.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Environmental or equivalent.
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

HEALTH, SAFETY & ENVIRONMENT DIRECTOR (HEALTHCARE)

A HEALTH, SAFETY AND ENVIRONMENT DIRECTOR (HEALTHCARE) IS DESIGNATED TO PROVIDE ADVICE, SUPPORT AND GUIDANCE ON ALL MATTERS OF LEGAL COMPLIANCE REGARDING HEALTH AND SAFETY THUS ENSURING THAT THE COMPANY MEETS THE NECESSARY LEGISLATIVE OBLIGATIONS.

A Health, Safety and Environment Director (Healthcare) will be able to:

1. Drive the continuous improvement of health and safety management;
2. Facilitate the development of innovative policies and practices;
3. Review policies and prepare comprehensive reports for senior management and the health and safety committee;
4. Review and maintain health and safety related work plans for all projects;
5. Ensure that effective tools, systems, and policies are in place to ensure compliance with both internal expectations and legal requirements;
6. Proactively identify and address health, safety, and security issues/concerns.
7. Recognise safety performance excellence, and address situations where performance fails to meet expectation;
8. Build a strong organisation by developing people and attracting top talent to the health, safety and security team;
9. Support the company's global H&S goals as an active member of and contributor to the H&S leadership team; and
10. Represent the company through involvement with various boards, commissions, associations and community groups to maintain and develop professional relations and promote community good will.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science Occupational Health and Safety or equivalent
- ii. Experience: Minimum 10 years

Annex 7.6.2:

HSE

(Health and Safety)



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 3**

HEALTH & SAFETY TECHNICIAN (HEALTHCARE)

A HEALTH AND SAFETY TECHNICIAN (HEALTHCARE) IS DESIGNATED TO ENSURE THAT ITS ACTIVITIES PRESENT A HIGH LEVEL OF PROTECTION FOR THE HEALTH AND SAFETY OF ITS EMPLOYEES, CUSTOMERS, THE PUBLIC AND THE ENVIRONMENT.

A Health and Safety Technician (Healthcare) will be able to:

1. Prevent harm to workers, property, the environment, and the general public;
2. Promote occupational health and safety within organisations;
3. Conduct inspections and inform the management of a business which areas may not be in compliance with government policies, in order to gain their support for addressing these areas;
4. Advise management on the cost and effectiveness of safety and health programs;
5. Collect data on work environments for analysis by occupational health and safety specialists;
6. Assist in implementing and evaluating programs designed to limit risks to workers;
7. Identify potential hazards in systems, equipment, products, facilities, or processes planned for use in the future;
8. Conduct training sessions for management, supervisors, and workers on health and safety practices and regulations to promote an understanding of a new or existing process;
9. Examine and test machinery and equipment to ensure the machinery and equipment meet appropriate safety regulations; and
10. Ensure that hazardous materials are stored correctly.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in Occupational Health and Safety or equivalent
- ii. Experience: Not necessary



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 4**

HEALTH AND SAFETY OFFICER (HEALTHCARE)

A HEALTH & SAFETY OFFICER (HEALTHCARE) IS DESIGNATED TO PERFORM A VARIETY OF ROUTINE AND COMPLEX ADMINISTRATIVE, TECHNICAL, AND PROFESSIONAL WORK IN ANALYSING AND ADMINISTERING VARIOUS COMPONENTS OF THE ENVIRONMENTAL, HEALTH AND SAFETY PROGRAMS.

A Health and Safety Officer (Healthcare) will be able to:

1. Design and recommend effective OH&S system that establishes authority and accountability for safety at the department level;
2. Lead process of developing and recommending OH&S policy and standards or changes to existing standards and the enforcement of them;
3. Consult with department safety personnel in the implementation of safety programs, analysis, problem solving, and corrective action plans;
4. Evaluate accident statistics and define target goals for performance and monitor for achievement of goals; recommends long-range accident prevention and cost-control objectives designed to meet established goals;
5. Develop and implement processes, methods and tools designed to measure, evaluate, and monitor departmental safety performance;
6. Oversee the design, preparation, analysis and distribution of safety data and statistical reports concerning accidents, trends and solutions to work related problems to all departments and executive management;
7. Develop and oversee contracts with consultants for services provided to the Company.
8. Develop and initiate new programs and services related to OH&S strategic long-range plans;
9. Oversee review and approval process for department Accident Prevention Plans; and
10. Develop and implement a sound OH&S document and record management system.

Pre-requisite:

- i. Academic Qualification: Possess minimum Diploma in Science Occupational Health and Safety or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

HEALTH & SAFETY EXECUTIVE (HEALTHCARE)

A HEALTH AND SAFETY EXECUTIVE (HEALTHCARE) IS DESIGNATED TO MONITOR DEVELOPMENTS AND ENSURE COMPANY COMPLIANCES AT ALL TIMES WITH APPLICABLE LEGAL REQUIREMENTS ON HEALTH AND SAFETY MATTERS WITH RESPECT TO OSH ACT, FACTORY MACHINERY ACT, AND ENVIRONMENTAL QUALITY ACT AND RELATED ACTS.

A Health and Safety Executive (Healthcare) will be able to:

1. Assist Section / Department Heads maintaining a healthy and safe working environment;
2. Ensure all processing activities adhering to the respective approved health and safe operating procedure;
3. Initiate and coordinate all health and safety awareness activities and training;
4. Evaluate and approve Occupational Health and Safety Analysis;
5. Maintain and update Material Safety Data Sheets (MSDS) or Chemical Safety Data Sheets (CSDS), both in English and Bahasa Malaysia;
6. Ensure MSDS/CSDS availability and easily accessibility to all users at the places where the chemicals are used or stored;
7. Conduct HSE Inspection at regular basis together with the appointed members of the HSE Committee;
8. Update and maintain Re-Act Summary and Accident/Incident Summary on monthly basis;
9. Maintain a register of all Lost Time Injuries (LTIs) and near misses/unsafe acts, and report to Head-Office; and
10. Ensure Personal Protective Equipment (PPE), safety kits, machine safety guards (and safety control devices) and safety protection equipments (e.g. fire-protection system) are available in good condition.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in Occupational Health and Safety or equivalent.
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

OCCUPATIONAL HEALTH AND SAFETY MANAGER (HEALTHCARE)

OCCUPATIONAL HEALTH AND SAFETY MANAGER (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR DEVELOPING AND IMPLEMENTING PROGRAMS AND POLICIES THAT ENSURE THE OVERALL SAFETY AND HEALTH OF EMPLOYEES AND THAT ENABLES COMPLIANT BUSINESS OPERATIONS.

An Occupational Health and Safety Manager (Healthcare) will be able to:

1. Plan, organise and conduct Monthly Supervisor Safety meetings for three shifts at three separate locations;
2. Inspect organisation facilities to detect existing or potential hazards and recommend corrective or preventative measures;
3. Oversee workers compensation claims management;
4. Develop and maintain Health and Safety programs and policies as required;
5. Conduct root cause analysis of industrial accidents and illnesses and develop actions plans to eliminate hazards;
6. Provide leadership, strategic planning and subject matter expertise that ensures appropriate EH&S systems and resources are in place;
7. Create Health and Safety Plan to ensure conformance with regulatory and company requirements; and
8. Promote knowledge transfer through regional teams, best practices and training.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science Occupational Health and Safety or equivalent
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

HEALTH, SAFETY AND ENVIRONMENT DIRECTOR (HEALTHCARE)

HEALTH, SAFETY AND ENVIRONMENT DIRECTOR (HEALTHCARE) IS DESIGNATED TO PROVIDE ADVICE, SUPPORT AND GUIDANCE ON ALL MATTERS OF LEGAL COMPLIANCE REGARDING HEALTH AND SAFETY THUS ENSURING THAT THE COMPANY MEETS THE NECESSARY LEGISLATIVE OBLIGATIONS.

A Health, Safety and Environment Director (Healthcare) will be able to:

1. Drive the continuous improvement of health and safety management;
2. Facilitate the development of innovative policies and practices;
3. Review policies and prepare comprehensive reports for senior management and the health and safety committee;
4. Review and maintain health and safety related work plans for all projects;
5. Ensure that effective tools, systems, and policies are in place to ensure compliance with both internal expectations and legal requirements;
6. Proactively identify and address health, safety, and security issues/concerns.
7. Recognise safety performance excellence, and address situations where performance fails to meet expectation;
8. Build a strong organisation by developing people and attracting top talent to the health, safety and security team;
9. Support the company's global H&S goals as an active member of and contributor to the H&S leadership team; and
10. Represent the company through involvement with various boards, commissions, associations and community groups to maintain and develop professional relations and promote community good will.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Science Occupational Health and Safety or equivalent
- ii. Experience: Minimum 10 years

ANNEX 7.7:

REGULATORY AFFAIRS DIVISION

Annex 7.7.1:

Regulatory Affairs
(Compliance)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

COMPLIANCE ASSISTANT EXECUTIVE (HEALTHCARE)

A COMPLIANCE ASSISTANT EXECUTIVE (HEALTHCARE) IS DESIGNATED TO SUPPORT THE COMPLIANCE EXECUTIVE AND COMPLIANCE DEPARTMENT IN OVERSEEING THE COMPLIANCE FUNCTION OF THE COMPANY, INCLUDING MONITORING THE COMPANY PRACTICES TO ENSURE CONSISTENCY WITH THE BUSINESS RULES, GUIDELINES AND REGULATIONS.

A Compliance Assistant Executive (Healthcare) will be able to:

1. Assist in establishing a compliance program, reporting, investigation and recommendation of remedial action;
2. Provide compliance advice and ensure enforcement of all compliance programmes;
3. Assist in reviewing filings with regulators, regular compliance returns and internal investigations;
4. Match the company's compliance effort including staff training, liaison with external auditors and the relevant authorities; and
5. Check new products to confirm compliance with applicable regulations.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in Law/Corporate Secretarial/Accountancy qualifications or equivalent.
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

COMPLIANCE EXECUTIVE (HEALTHCARE)

A COMPLIANCE EXECUTIVE (HEALTHCARE) IS DESIGNATED TO SUPPORT COMPLIANCE DEPARTMENT IN OVERSEEING THE COMPLIANCE FUNCTION OF THE COMPANY, INCLUDING MONITORING THE COMPANY'S PRACTICES TO ENSURE CONSISTENCY WITH THE BUSINESS RULES, GUIDELINES AND REGULATIONS.

A Compliance Executive (Healthcare) will be able to:

1. Establish a compliance program, reporting, investigation and recommendation of remedial action;
2. Provide compliance advice and ensure enforcement of all compliance programmes;
3. Review filings with regulators, regular compliance returns and internal investigations;
4. Match the company's compliance effort including staff training, liaison with external auditors and the relevant authorities;
5. Supervise, support, and resolve issues with department professional and support staff; and
6. Assure department staff adhere to policies, procedures, deadlines, and other regulatory requirements of the company

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Law/Corporate Secretarial/Accountancy qualifications or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

REGULATORY AFFAIRS MANAGER (HEALTHCARE)

A REGULATORY AFFAIRS MANAGER (HEALTHCARE) IS DESIGNATED TO MANAGE REGULATORY AFFAIRS TEAM AND REGULATORY AFFAIRS RELATED ACTIVITIES TO KEEP TRACK OF THE EVER-CHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Manager (Healthcare) will be able to:

1. Attend to Regulatory enquiry, audit and submission of documents;
2. Responsible to manage the departmental operations for regulatory compliance of the company's products and licenses;
3. Keep abreast with local country and overseas legislation and guidelines;
4. Review company practices and advising on regulatory requirements;
5. Oversee preparation and/or review regulatory documentation including verifying finished artwork (ie labels, package inserts, unit boxes);
6. Ensure smooth process of product registrations and licenses;
7. Liaise closely, build and maintain rapport with the regulatory authorities;
8. Manage and maintain Patents/Intellectual Property validity for all registered Patents; and
9. Work closely with R&D, Production, QA, QC, Marketing Department for projects such as new product development and launching.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in related field or equivalent.
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

REGULATORY AFFAIRS DIRECTOR (HEALTHCARE)

A REGULATORY AFFAIRS DIRECTOR (HEALTHCARE) IS DESIGNATED TO DIRECTS REGULATORY OPERATIONS GROUP WHICH IS RESPONSIBLE FOR SUBMISSION OF ALL REGULATORY COMMUNICATIONS IN ACCORDANCE WITH APPLICABLE GOVERNMENTAL REGULATIONS AND GUIDANCES.

A Regulatory Affairs Director (Healthcare) will be able to:

1. Conduct reviews of submissions for completeness, scientific accuracy and ease of review;
2. Provide regulatory guidance Regulatory and Compliance team;
3. Direct preparation and review of annual reports and supplements for marketed products;
4. Manage and develop staff in group to provide career growth;
5. Monitor and assess impact of regulations, guidance, current regulatory environment and competitive labelling;
6. Provide regulatory guidance to functional areas to ensure understanding and compliance with appropriate regulations and guidelines; and
7. Oversee Company Regulatory function.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in related field or equivalent
- ii. Experience: Minimum 7 years

Annex 7.7.2:

Regulatory Affairs
(Regulatory)



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 4**

REGULATORY AFFAIRS ASSISTANT EXECUTIVE (HEALTHCARE)

A REGULATORY AFFAIRS ASSISTANT EXECUTIVE (HEALTHCARE) IS DESIGNATED TO ASSIST REGULATORY AFFAIRS TEAM TO KEEP TRACK OF THE EVER-CHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Assistant Executive (Healthcare) will be able to:

1. Provide assistance to the Regulatory Affairs team with regulatory affairs relating to products;
2. Check sources for updated regulations, new consultative documents and other HSE information/issues relevant to the company;
3. Assist with the establishing and modification of procedures in the responsible care and quality areas;
4. Ensure company comply with all of the regulations and laws pertaining to their business;
5. Advise company on the regulatory aspects and climate that would affect proposed activities; and
6. Provide regulatory support to product in various stages of development.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Diploma in related field or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

REGULATORY AFFAIRS EXECUTIVE (HEALTHCARE)

A REGULATORY AFFAIRS EXECUTIVE (HEALTHCARE) IS DESIGNATED TO INVOLVE IN REGULATORY AFFAIRS TEAM TO KEEP TRACK OF THE EVER-CHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Executive (Healthcare) will be able to:

1. Provide assistance to the Regulatory Affairs team with regulatory affairs relating to products;
2. Check sources for updated regulations, new consultative documents and other HSE information/issues relevant to the company;
3. Assist with the establishing and modification of procedures in the responsible care and quality areas;
4. Ensure company comply with all of the regulations and laws pertaining to their business;
5. Advise company on the regulatory aspects and climate that would affect proposed activities;
and
6. Provide regulatory support to product in various stages of development.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in related field or equivalent
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

REGULATORY AFFAIRS MANAGER (HEALTHCARE)

A REGULATORY AFFAIRS MANAGER (HEALTHCARE) IS DESIGNATED TO MANAGE REGULATORY AFFAIRS TEAM AND REGULATORY AFFAIRS RELATED ACTIVITIES TO KEEP TRACK OF THE EVER-CHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Manager (Healthcare) will be able to:

1. Attend to regulatory enquiry, audit and submission of documents;
2. Responsible to manage the departmental operations for regulatory compliance of the company's products and licenses;
3. Keep abreast with local country and overseas legislation and guidelines;
4. Review company practices and advising on regulatory requirements;
5. Oversee preparation and/or review regulatory documentation including verifying finished artwork (ie labels, package inserts, unit boxes);
6. Ensure smooth process of product registrations and licenses;
7. Liaise closely, build and maintain rapport with the regulatory authorities;
8. Manage and maintain Patents/Intellectual Property validity for all registered Patents; and
9. Work closely with R&D, Production, QA, QC, Marketing Department for projects such as new product development and launching.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in related field or equivalent.
- ii Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

REGULATORY AFFAIRS DIRECTOR (HEALTHCARE)

A REGULATORY AFFAIRS DIRECTOR (HEALTHCARE) IS DESIGNATED TO DIRECTS REGULATORY OPERATIONS GROUP WHICH IS RESPONSIBLE FOR SUBMISSION OF ALL REGULATORY COMMUNICATIONS IN ACCORDANCE WITH APPLICABLE GOVERNMENTAL REGULATIONS AND GUIDANCES.

A Regulatory Affairs Director (Healthcare) will be able to:

1. Conduct reviews of submissions for completeness, scientific accuracy and ease of review;
2. Provide regulatory guidance Regulatory and Compliance team;
3. Direct preparation and review of annual reports and supplements for marketed products;
4. Manage and develop staff in group to provide career growth;
5. Monitor and assess impact of regulations, guidance, current regulatory environment and competitive labeling;
6. Provide regulatory guidance to functional areas to ensure understanding and compliance with appropriate regulations and guidelines; and
7. Oversee Company Regulatory function.

Pre-requisites:

- i. Academic Qualification: Possess minimum Science Degree in related field or equivalent
- ii. Experience: Minimum 7 years

ANNEX 7.8:

ENGINEERING DIVISION

Annex 7.8.1:

Engineering (Maintenance)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

ENGINEERING ASSISTANT TECHNICIAN (HEALTHCARE)

ENGINEERING ASSISTANT TECHNICIAN (HEALTHCARE) IS DESIGNATED TO ROUTINE TECHNICAL OFFICE AND FIELD ENGINEERING FUNCTIONS IN CONNECTION WITH ASSIGNED PROJECT ACTIVITIES AND PERFORMS OTHER DUTIES ASSIGNED.

An Engineering Assistant Technician (Healthcare) will be able to:

1. Update various computer databases relating to work using office software;
2. Assist contractors and the public in interpreting and complying with construction requirements;
3. Use drafting techniques and procedures to prepare routine engineering designs;
4. Develop graphs, charts, and exhibits for presentation;
5. Assist in the performance of research and in developing project design and cost estimates for the assigned project;
6. Assist in field inspections of projects, developments, and other improvements; and
7. Inspect and maintain daily written records of progress made in construction and materials used.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM Level 2 in related field
- ii. Experience: Not Necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

ENGINEERING TECHNICIAN (HEALTHCARE)

ENGINEERING TECHNICIAN (HEALTHCARE) IS DESIGNATED TO ASSIST IN TECHNICAL TASKS, CONTRIBUTORY TO DESIGN, DEVELOPMENT, MANUFACTURE, CONSTRUCTION, INSTALLATION, MAINTENANCE AND REPAIR OF MECHANICALLY FUNCTIONING PLANT AND EQUIPMENT AND REPAIR OF ELECTRICAL SYSTEMS AND EQUIPMENT.

An Engineering Technician (Healthcare) will be able to:

1. Assist in research and development works concerning machine tools, engines, heating and ventilating, refrigerating installations, mechanically functioning plant and equipment, electrical systems, equipment and facilities and testing prototypes;
2. Design and prepare layouts of machines, mechanical installations, electrical installations and circuitry;
3. Prepare detailed estimates of quantities and costs of materials and labour required for manufacture and installation;
4. Assist in technical supervision of manufacture, utilisation, maintenance and repair of mechanical plant and engines and repair of electrical systems and equipment;
5. Apply technical knowledge of machinery and mechanical engineering principles and applying technical knowledge of electrical engineering theory and practice in order to identify and solve problems arise in the course of their work; and
6. Assist in the development and monitor the implementation of safety standards and procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT TECHNOLOGIST (HEALTHCARE)

AN ASSISTANT TECHNOLOGIST (HEALTHCARE) IS DESIGNATED TO PERFORM A VARIETY OF PROFESSIONAL FIELD AND OFFICE ENGINEERING WORK IN CONNECTION WITH THE DESIGN, DEVELOPMENT, SPECIAL PROJECTS, TRANSPORTATION AND CONSTRUCTION SECTIONS OF THE ENGINEERING DIVISION AND OTHER RELATED ENGINEERING PROJECTS.

An Assistant Technologist (Healthcare) will be able to:

1. Check construction plans for accuracy and conformance with requirements;
2. Confer with contractors, engineers to resolve complaints;
3. Assist and work with other sections within the engineering division on specific assigned tasks;
4. Recommend engineering requirements within established procedures and standards;
5. Conduct preliminary studies of engineering projects including making calculations,
6. Prepare budget and project schedule, gather supporting data, and analyse alternatives;
7. Conduct utility master plan studies and fee updates; and
8. Update pavement management system.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in engineering or equivalent
- ii. Experience: minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

MAINTENANCE TECHNOLOGIST (HEALTHCARE)

A MAINTENANCE TECHNOLOGIST (HEALTHCARE) DESIGN TO APPLY ENGINEERING CONCEPTS TO THE OPTIMIZATION OF EQUIPMENT, PROCEDURES, AND DEPARTMENTAL BUDGETS TO ACHIEVE BETTER MAINTAINABILITY, RELIABILITY, AND AVAILABILITY OF EQUIPMENT.

A Maintenance Technologist (Healthcare) will be able to:

1. Analyse repetitive equipment failures;
2. Prepare estimation of maintenance costs and evaluation of alternatives;
3. Forecast of equipment spare parts;
4. Assess the needs for equipment replacements and establish replacement programs when due;
5. Apply project management and scheduling principles to replacement programs;
6. Assess required maintenance tools and skills required for efficient maintenance of equipment;
7. Write maintenance strategies to help with installation and commissioning guidelines;
8. Assess required skills required for maintenance personnel;
9. Review personnel transfers to and from maintenance organisations; and
10. Assess and report safety hazards associated with maintenance of equipment.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Engineering (Electrical/Electronic/ Mechanical/Mechatronic /Electromechanical) or equivalent
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

MAINTENANCE MANAGER (HEALTHCARE)

A MAINTENANCE MANAGER (HEALTHCARE) IS DESIGNATED TO ENSURE THAT COMPANY'S FACILITIES AND EQUIPMENTS ARE EFFECTIVELY MAINTAINED TO MAXIMISE PERFORMANCE OF PRODUCTION EQUIPMENT EFFICIENTLY AND REGULARLY, PREVENT BREAKDOWN OR FAILURES, MINIMISE PRODUCTION LOSS FROM FAILURES AND INCREASE RELIABILITY OF THE OPERATING SYSTEMS.

A Maintenance Manager (Healthcare) will be able to:

1. Design, implement, and modify preventive maintenance programs by reviewing production, quality control, and maintenance reports and statistics;
2. Supervise facilities maintenance department personnel; Direct and supervise contract maintenance services for landscaping, roofing, janitorial, forklift, and pest control services;
3. Maintain maintenance staff job results by coaching, counselling, and disciplining employees; Plans, monitor and appraise job results; Complete maintenance operational requirements by scheduling and assigning employees; Follow up on work results;
4. Schedule and prioritise maintenance, preventive maintenance and repairs activities of the facility, structures, equipment and events. Insures timely completion of work;
5. Identify current and future maintenance requirements by establishing rapport with management, engineering, and production personnel, tradesmen, technicians, and other persons in a position to understand maintenance requirements;
6. Direct maintenance operations by initiating, coordinating, and enforcing program, operational, and personnel policies and procedures;
7. Provide and maintain heat, cool, electric power, gas, compressed air, water, and dust collection by directing installation of, modifications to, and maintenance activities on utility systems; and
8. Facilitate employee's training.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree Engineering or equivalent
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

ENGINEERING & MAINTENANCE DIRECTOR (HEALTHCARE)

ENGINEERING AND MAINTENANCE DIRECTOR (HEALTHCARE) IS DESIGNATED TO ORGANISE AND OVERSEE REPAIR CREWS TO ENSURE JOBS ARE PERFORMED SAFELY AND EFFICIENTLY. IN ORDER TO PROVIDE THE BEST POSSIBLE SERVICES, A DIRECTOR NEEDS TO HAVE AN EXPERT KNOWLEDGE OF MANY ASPECTS REGARDING CONSTRUCTION AND REPAIR.

An Engineering & Maintenance Director (Healthcare) will be able to:

1. Develop and set the engineering, maintenance and facilities strategy and communicate this effectively;
2. Lead team to provide advice, policy, specifications and provision of engineering, maintenance and facilities services to enable company's facilities operate effectively;
3. Work with property buying and corporate purchasing to source the best value, lowest cost to deliver engineering and maintenance solutions which are better, simpler and cheaper;
4. Forecast trends in engineering developments and seek opportunities to maintain competitive advantage;
5. Manage cost centre expenditure to be within budgets and maximise return from the development programme budget by exercising effective use and control;
6. Identify and implement opportunities to make cost savings and achieve year on year reduction in revenue and capital expenditure;
7. Set clear direction to ensure team is clear on their accountabilities and deliverables; and
8. Develop, motivate and manage team to build capability and future talents;

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Engineering, Building, Construction or related field
- ii. Experience: Minimum 10 years

Annex 7.8.2:

Engineering
(Project Engineering)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

ENGINEERING ASSISTANT TECHNICIAN (HEALTHCARE)

AN ENGINEERING ASSISTANT TECHNICIAN (HEALTHCARE) IS DESIGNATED TO ROUTINE TECHNICAL OFFICE AND FIELD ENGINEERING FUNCTIONS IN CONNECTION WITH ASSIGNED PROJECT ACTIVITIES AND PERFORM OTHER DUTIES ASSIGNED.

An Engineering Assistant Technician (Healthcare) will be able to:

1. Update various computer databases relating to work using office software;
2. Assist contractors and the public in interpreting and complying with construction requirements;
3. Use drafting techniques and procedures to prepare routine engineering designs;
4. Develop graphs, charts, and exhibits for presentation;
5. Assist in the performance of research and in developing project design and cost estimates for the assigned project;
6. Assist in field inspections of projects, developments, and other improvements;
7. Inspect and maintain daily written records of progress made in construction and materials used.

Pre-requisites:

- i. Academic Qualification: Possess minimum SKM Level 2 in related field
- ii. Experience: Not Necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

ENGINEERING TECHNICIAN (HEALTHCARE)

AN ENGINEERING TECHNICIAN (HEALTHCARE) IS DESIGNATED TO ASSIST IN TECHNICAL TASKS, CONTRIBUTORY TO DESIGN, DEVELOPMENT, MANUFACTURE, CONSTRUCTION, INSTALLATION, MAINTENANCE AND REPAIR OF MECHANICALLY FUNCTIONING PLANT AND EQUIPMENT AND REPAIR OF ELECTRICAL SYSTEMS AND EQUIPMENT.

An Engineering Technician (Healthcare) will be able to:

1. Assist in research and development works concerning machine tools, engines, heating and ventilating, refrigerating installations, mechanically functioning plant and equipment, electrical systems, equipment and facilities and testing prototypes;
2. Design and prepare layouts of machines, mechanical installations, electrical installations and circuitry;
3. Prepare detailed estimates of quantities and costs of materials and labour required for manufacture and installation;
4. Assist with technical supervision of manufacture, utilisation, maintenance and repair of mechanical plant and engines and repair of electrical systems and equipment;
5. Apply technical knowledge of machinery and mechanical engineering principles and applying technical knowledge of electrical engineering theory and practice in order to identify and solve problems arising in the course of their work;
6. Assist in the development and monitoring the implementation of safety standards and procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT TECHNOLOGIST (HEALTHCARE)

AN ASSISTANT TECHNOLOGIST (HEALTHCARE) IS DESIGNED TO PERFORMS A VARIETY OF PROFESSIONAL FIELD AND OFFICE ENGINEERING WORK IN CONNECTION WITH THE DESIGN, DEVELOPMENT, SPECIAL PROJECTS, TRANSPORTATION AND CONSTRUCTION SECTIONS OF THE ENGINEERING DIVISION AND OTHER RELATED ENGINEERING PROJECTS.

An Assistant Technologist (Healthcare) will be able to:

1. Check construction plans for accuracy and conformance with requirements;
2. Confer with contractors, engineers to resolve complaints;
3. Assist and work with other sections within the engineering division on specific assigned tasks;
4. Recommend engineering requirements within established procedures and standards;
5. Conduct preliminary studies of engineering projects including making calculations,
6. Prepare budgets and project schedule, gather supporting data, and analyse alternatives;
7. Conduct utility master plan studies and fee updates; and
8. Update pavement management system.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in engineering or equivalent
- ii. Experience: Minimum 2 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

MECHANICAL TECHNOLOGIST (HEALTHCARE)

A MECHANICAL TECHNOLOGIST (HEALTHCARE) CONDUCTS RESEARCH AND PROVIDE ADVICES ON DESIGN AND DIRECTS PRODUCTION OF MACHINES, MACHINERY AND INDUSTRIAL PLANT, EQUIPMENT AND SYSTEMS, AND PROVIDE ADVICES ON AND DIRECT THEIR FUNCTIONING, MAINTENANCE AND REPAIRS, OR STUDY AND ADVICE ON TECHNOLOGICAL ASPECTS OF PARTICULAR MATERIALS, PRODUCTS OR PROCESSES.

A Mechanical Technologist (Healthcare) will be able to:

1. Advise in designing machinery and tools for manufacturing, mining, construction, agricultural work and other industrial purposes;
2. Advise in designing steam, internal combustion and other non-electric motors and engines used for driving industrial or other machinery;
3. Advise in designing power plant, heating and ventilation systems, steering gear, pumps and other mechanical equipment;
4. Advise in designing road vehicle bodies, suspension systems, brakes and other components;
5. Advise in designing heating, ventilation and refrigeration systems and equipment;
6. Advise in designing mechanical plant and equipment;
7. Advise in designing non-electrical parts of apparatus or products such as word processors, computers, precision instruments, cameras and projectors, etc.; and
8. Establish control standards and procedures to ensure efficient functioning and safety of machines, machinery, tools, motors, engines, and industrial plant, equipment or systems;

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Mechanical Engineering or equivalent.
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

PROJECT TECHNOLOGIST (HEALTHCARE)

PROJECT TECHNOLOGIST (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE FOR COORDINATION OF ALL TECHNICAL ACTIVITIES ON ASSIGNED PROJECTS.

A Project Technologist (Healthcare) will be able to:

1. Head project meetings to collect and disseminate information pertaining to projects;
2. Coordinate the collection and dissemination of technical information between/within the company and customer;
3. Schedule and monitor program activity to achieve an “on-time” result including follow-up with external suppliers to ensure timely response to action items;
4. Monitor program cost activity to achieve an “in budget” result;
5. Prepare quotations utilizing supplier information, cost standards, technical information from quality, manufacturing engineering, design;
6. Create bill of material, detailed instructions for manufacturing process of new part, specification for packaging, external supplier specification to provide standard cost structure and instructions for manufacturing;
7. Evaluate project performance of functional areas;
8. Select and recommend procedures or development of methods;
9. Prepare designs, drawings, plans and specifications for projects, engineered systems, technical equipment or components;
10. Supervise technical testing, survey or field engineering teams;
11. Assist in client contact and communication pertaining to specific projects; and
12. Review and monitor project progress to assure quality and adherence to requirements of contract documents.

Pre-requisites:

- i. Academic Qualification: Possess minimum Bachelor of Science degree in engineering
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

PROJECT ENGINEERING MANAGER (HEALTHCARE)

PROJECT ENGINEERING MANAGER (HEALTHCARE) IS DESIGNATED TO BE RESPONSIBLE IN PLANNING, ORGANISING, AND MANAGING RESOURCES TO BRING ABOUT THE SUCCESSFUL COMPLETION OF SPECIFIC PROJECT GOALS AND OBJECTIVES.

A Project Engineering Manager (Healthcare) will be able to:

1. Create and execute project work plans and revises as appropriate to meet changing needs and requirements;
2. Identify resources needed and assigns individual responsibilities;
3. Manage day-to-day operational aspects of a project and scope;
4. Review deliverables prepared by team before passing to client;
5. Prepare for engagement reviews and quality assurance procedures;
6. Minimize exposure and risk on project; and
7. Ensure project documents are complete, current, and stored appropriately.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree Engineering or equivalent
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

ENGINEERING AND MAINTENANCE DIRECTOR (HEALTHCARE)

ENGINEERING AND MAINTENANCE DIRECTOR (HEALTHCARE) IS DESIGNATED TO ORGANISE AND OVERSEE REPAIR CREWS TO ENSURE JOBS ARE PERFORMED SAFELY AND EFFICIENTLY. IN ORDER TO PROVIDE THE BEST POSSIBLE SERVICES, A DIRECTOR NEEDS TO HAVE AN EXPERT KNOWLEDGE OF MANY ASPECTS REGARDING CONSTRUCTION AND REPAIR.

An Engineering & Maintenance Director (Healthcare) will be able to:

1. Develop and set the engineering, maintenance and facilities strategy and communicate this effectively;
2. Lead team to provide advice, policy, specifications and provision of engineering, maintenance and facilities services to enable company's facilities operate effectively;
3. Work with property buying and corporate purchasing to source the best value, lowest cost to deliver engineering and maintenance solutions which are better, simpler and cheaper;
4. Forecast trends in engineering developments and seek opportunities to maintain competitive advantage;
5. Manage cost centre expenditure to be within budgets and maximise return from the development programme budget by exercising effective use and control;
6. Identify and implement opportunities to make cost savings and achieve year on year reduction in revenue and capital expenditure;
7. Set clear direction to ensure team is clear on their accountabilities and deliverables; and
8. Develop, motivate and manage team to build capability and future talents.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Engineering, Building, Construction or related field
- ii. Experience: Minimum 10 years

Annex 7.8.3:

**Engineering
(Electrical and
Instrumentation)**



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

ENGINEERING ASSISTANT TECHNICIAN (HEALTHCARE)

AN ENGINEERING ASSISTANT TECHNICIAN (HEALTHCARE) IS DESIGNATED TO ROUTINE TECHNICAL OFFICE AND FIELD ENGINEERING FUNCTIONS IN CONNECTION WITH ASSIGNED PROJECT ACTIVITIES AND PERFORM OTHER DUTIES ASSIGNED.

An Engineering Assistant Technician (Healthcare) will be able to:

1. Update various computer databases relating to work using office software;
2. Assist contractors and the public in interpreting and complying with construction requirements;
3. Use drafting techniques and procedures to prepare routine engineering designs;
4. Develop graphs, charts, and exhibits for presentation;
5. Assist in the performance of research and in developing project design and cost estimates for the assigned project;
6. Assist in the field inspections of projects, developments, and other improvements; and
7. Inspect and maintain daily written records of progress made in construction and materials used.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in related field
- ii. Experience: Not necessary



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 3**

ENGINEERING TECHNICIAN (HEALTHCARE)

AN ENGINEERING TECHNICIAN (HEALTHCARE) IS DESIGNATED TO ASSIST IN TECHNICAL TASKS, CONTRIBUTORY TO DESIGN, DEVELOPMENT, MANUFACTURE, CONSTRUCTION, INSTALLATION, MAINTENANCE AND REPAIR OF MECHANICALLY FUNCTIONING PLANT AND EQUIPMENT AND REPAIR OF ELECTRICAL SYSTEMS AND EQUIPMENT.

An Engineering Technician (Healthcare) will be able to:

1. Assist in research and development works concerning machine tools, engines, heating and ventilating, refrigerating installations, mechanically functioning plant and equipment, electrical systems, equipment and facilities and testing prototypes;
2. Design and prepare layouts of machines, mechanical installations, electrical installations and circuitry;
3. Prepare detailed estimates of quantities and costs of materials and labour required for manufacture and installation;
4. Assist with technical supervision of manufacture, utilisation, maintenance and repair of mechanical plant and engines and repair of electrical systems and equipment;
5. Apply technical knowledge of machinery and mechanical engineering principles and apply technical knowledge of electrical engineering theory and practice in order to identify and solve problems arising in the course of their work; and
6. Assist in the development and monitor the implementation of safety standards and procedures.

Pre-requisites:

- i. Academic Qualification: Possess minimum Certificate in related field
- ii. Experience: Minimum 1 year



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 4**

ASSISTANT TECHNOLOGIST (HEALTHCARE)

AN ASSISTANT TECHNOLOGIST (HEALTHCARE) IS DESIGNATED TO PERFORM A VARIETY OF PROFESSIONAL FIELD AND OFFICE ENGINEERING WORK IN CONNECTION WITH THE DESIGN, DEVELOPMENT, SPECIAL PROJECTS, TRANSPORTATION AND CONSTRUCTION SECTIONS OF THE ENGINEERING DIVISION AND OTHER RELATED ENGINEERING PROJECTS.

An Assistant Technologist (Healthcare) will be able to:

1. Check construction plans for accuracy and conformance with requirements;
2. Confer with contractors, engineers to resolve complaints;
3. Assist and work with other sections within the engineering division on specific assigned tasks;
4. Recommend engineering requirements within established procedures and standards;
5. Conduct preliminary studies of engineering projects including making calculations,
6. Preparing budgets and project schedule, gathering supporting data, and analyse alternatives;
7. Conduct utility master plan studies and fee updates; and
8. Update pavement management system.

Pre-requisites:

- i. Academic Qualification: Possess minimum Diploma in engineering or equivalent
- ii. Experience: Minimum 2 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

INSTRUMENTATION TECHNOLOGIST (HEALTHCARE)

AN INSTRUMENTATION TECHNOLOGIST (HEALTHCARE) IS DESIGNATED TO DESIGN, DEVELOP, ADAPT, TEST AND MAINTAIN ELECTRONIC COMPONENTS, CIRCUITS AND SYSTEMS USED FOR COMPUTER SYSTEMS, COMMUNICATIONS SYSTEMS AND INDUSTRIAL APPLICATIONS.

An Instrumentation Technologist (Healthcare) will be able to:

1. Advise in designing electronic devices, circuits and systems used for computers, Communications and control systems and other industrial applications;
2. Design software especially embedded software to be used within such systems;
3. Develop apparatus and procedures to test electronic components, circuits and systems;
4. Supervise installation and commissioning of computer and telecommunications systems and ensuring proper control and protection methods;
5. Establish control standards and procedures to ensure efficient functioning and safety of electronic systems, motors and equipment;
6. Locate and correct malfunctions;
7. Organise and direct maintenance and repair of existing electronic systems, motors and equipment;
8. Study and advise on technological aspects of particular materials, products or processes;
9. Maintain technical liaison and consultancy with other relevant specialists;
10. Performing related tasks; and
11. Supervising other workers.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Electrical/ Electronic Engineering or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

ELECTRICAL & INSTRUMENTATION MANAGER (HEALTHCARE)

AN ELECTRICAL AND INSTRUMENTATION MANAGER (HEALTHCARE) IS DESIGNED TO OVERSEE A TEAM OF MAINTENANCE PROFESSIONALS WHO COORDINATE AND CARRY OUT ALL TASKS RELATED TO THE REPAIR AND IMPROVEMENT OF THE ELECTRICAL SYSTEMS AND INSTRUMENTATION, ELECTRONIC COMPONENTS, CIRCUITS AND SYSTEMS USED FOR COMPUTER SYSTEMS, COMMUNICATIONS SYSTEMS AND INDUSTRIAL APPLICATIONS.

An Electrical and Instrumentation Manager (Healthcare) will be able to:

1. Oversee a team of electrical and instrumentation service professionals, scheduling them for work, assigning tasks and reviewing their performance;
2. Negotiate all service contract agreements with external vendors;
3. Keep detailed records of all pending and completed work orders, maintaining these files in an organisationally implemented record-keeping system;
4. Be responsible for preparing and maintaining his department's budget, tracking all expenses as they occur; and
5. Ensure the team under his/her supervision performs all of their duties in compliance with any laws that regulate the field.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Electrical/ Electronic Engineering or equivalent.
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

ENGINEERING & MAINTENANCE DIRECTOR (HEALTHCARE)

ENGINEERING AND MAINTENANCE DIRECTOR (HEALTHCARE) IS DESIGNATED TO ORGANISE AND OVERSEE REPAIR CREWS TO ENSURE JOBS ARE PERFORMED SAFELY AND EFFICIENTLY. IN ORDER TO PROVIDE THE BEST POSSIBLE SERVICES, A DIRECTOR NEEDS TO HAVE AN EXPERT KNOWLEDGE OF MANY ASPECTS REGARDING OF CONSTRUCTION AND REPAIR.

An Engineering and Maintenance Director (Healthcare) will be able to:

1. Develop and set the engineering, maintenance and facilities strategy and communicate this effectively;
2. Lead team to provide advice, policy, specifications and provision of engineering, maintenance and facilities services to enable company's facilities operate effectively;
3. Work with property buying and corporate purchasing to source the best value, lowest cost to deliver engineering and maintenance solutions which are better, simpler and cheaper;
4. Forecast trends in engineering developments and seek opportunities to maintain competitive advantage;
5. Manage cost centre expenditure to be within budgets and maximise return from the development programme budget by exercising effective use and control;
6. Identify and implement opportunities to make cost savings and achieve year on year reduction in revenue and capital expenditure;
7. Set clear direction to ensure team is clear on their accountabilities and deliverables; and
8. Develop, motivate and manage team to build capability and future talents.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Engineering, Building, Construction or related field
- ii. Experience: Minimum 10 years

ANNEX 7.9:

BIOINFORMATICS

ANNEX 7.9.1:

BIOINFORMATICS



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT BIOINFORMATICIAN (HEALTHCARE)

AN ASSISTANT BIOINFORMATICIAN (HEALTHCARE) IS DESIGNATED TO PRIMARILY ASSIST ACTIVITIES PERTAINING TO DESIGN AND DEVELOPMENT OF BIOINFORMATICS SOFTWARE FOR IDENTIFIED BIOTECHNOLOGY SECTOR.

An Assistant Bioinformatician (Healthcare) will be able to:

1. Assist in designing bioinformatics software development;
2. Assist in the installation and testing of the software;
3. Maintain functionality of the hardware and peripherals and software;
4. Assist in documentation of bioinformatics data;
5. Assist report preparation; and
6. Keep and update records and procedures;

Pre-requisites:

- i. Academic Qualification: Diploma in IT/Computer Science and Biotechnology or related field
- ii. Experience: Minimum 1 year



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

BIOINFORMATICIAN (HEALTHCARE)

A BIOINFORMATICIAN (HEALTHCARE) IS DESIGNATED TO PRIMARILY CARRY-OUT ACTIVITIES PERTAINING TO DESIGN AND DEVELOPMENT OF BIOINFORMATICS SOFTWARE FOR BIOTECHNOLOGY SECTOR. DEALS WITH THE MATHEMATICAL MODELING AS WELL AS BIOINFORMATICS SOFTWARE DEVELOPMENT BASED ON SEMANTIC ENVIRONMENT.

A Bioinformatician (Healthcare) will be able to:

1. Carry out development on the new bioinformatics software, databases and data analysis, and computer systems;
2. Manage existing bioinformatics software development, databases and data analysis, and computer systems;
3. Carry out data collection and data analysis;
4. Make the necessary report and recommendations from the analysed data;
5. Maintain and ensure the software conforms to requirements;
6. Implement review and update standard operating procedures;
7. Develop of quality scientific software including writing new code and optimising existing code and algorithms for high performance computing environment;
8. Handle bioinformatics tool development, biological data and system analysis;
9. Handle analytical bioinformatics software design and development; and
10. Execute Formulation and Designing Mathematical Model based on Drug Development.

Pre-requisites:

- i. Academic Qualification: Degree in IT/Computer Science and Biotechnology or related fields
- ii. Experience: Minimum 2 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

BIOINFORMATICS MANAGER (HEALTHCARE)

A BIOINFORMATICS MANAGER (HEALTHCARE) IS DESIGNATED TO PRIMARILY MANAGE, ORGANISE AND ADMINISTER ACTIVITIES PERTAINING TO DEVELOPMENT PLAN, SYSTEM ANALYSIS, DATABASES AND ANALYSIS, SOFTWARE AND HARDWARE DEVELOPMENT, USER SUPPORT, INSTALLATION AND MAINTENANCE OF OPERATING SYSTEM AND MAINTAIN NETWORKING WITH OTHER ENTITIES.

A Bioinformatics Manager (Healthcare) will be able to:

1. Manage existing bioinformatics software development, databases and data analysis, and computer systems;
2. Plan and propose additional bioinformatics software development, databases and data analysis, and computer system;
3. Execute, coordinate and evaluate client's needs;
4. Carry out evaluation on the overall operation;
5. Manage human resource including recruitment, training, performance appraisal and staff development;
6. Supervise the implementation, review and update data and network security system;
7. Ensure systems conformance to standard and specifications; and
8. Responsible for department procurement and inventory.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in IT/Computer Science and Biotechnology or related fields
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

BIOINFORMATICS DIRECTOR (HEALTHCARE)

A BIOINFORMATICS DIRECTOR (HEALTHCARE) IS RESPONSIBLE FOR CREATION AND ADVANCEMENT OF DATABASES, ALGORITHMS, COMPUTATIONAL AND STATISTICAL TECHNIQUES AND THEORY TO SOLVE FORMAL AND PRACTICAL PROBLEMS ARISING FROM THE MANAGEMENT AND ANALYSIS OF BIOLOGICAL DATA.

A Bioinformatics Director (Healthcare) will be able to:

1. Map and analyse DNA and protein sequences, aligning different DNA and protein sequences to compare them and creating and viewing 3-D models of protein structures;
2. Provide requirements towards anticipated technological changes that will impact computational and storage requirements as well as require additional support resources or reassignment of existing resources;
3. Responsible for building programs by using computational formulas to determine outcomes based on biological projects or research;
4. Create query routines and building relational databases; and
5. Review database system to ensure it always in line with current technology.

Pre-requisites:

- i. Academic Qualification: Possess minimum Masters Degree in IT/Computer Science and Biotechnology or related fields
- ii. Experience: Minimum 10 years

ANNEX 8.1:

RESEARCH AND DEVELOPMENT DIVISION

Annex 8.1.1:

R&D

(Product Enhancement)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

RESEARCH AND DEVELOPMENT TECHNICIAN (INDUSTRIAL)

A RESEARCH AND DEVELOPMENT TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO PERFORM A VARIETY OF BASIC TESTS TO DETERMINE THE FUNCTIONALITY OF PRODUCTS AND FUTURE DEVELOPMENTS, ASSIST PRODUCT MANAGEMENT WITH VIABLE SOLUTIONS, COLLABORATE WITH OTHER TEAM MEMBERS FOR FUTURE DEVELOPMENTS, CONDUCTING PRODUCT DESIGN TESTS, ASSEMBLING PROTOTYPES AND COLLECTING DATA IN SUPPORT OF PRODUCT DEVELOPMENT AND BUSINESS UNIT EFFORTS.

A Research and Development Technician (Industrial) will be able to:

1. Perform basic test to determine the functionality of products;
2. Conduct product design testing;
3. Assemble prototype of the product;
4. Identify raw material needs from R&D formula;
5. Gather raw materials from onsite samples or orders appropriately;
6. Inspect the defection of product; and
7. Clean equipment after use.

Pre-requisites:

- i. Academic qualification: Possess minimum certificate in Science or equivalent
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

RESEARCH AND DEVELOPMENT SUPERVISOR (INDUSTRIAL)

A RESEARCH AND DEVELOPMENT SUPERVISOR (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR SUPERVISING THE ACTIVITIES TO EVALUATE THE QUALITY AND STABILITY OF IN-PROCESS AND FINAL PRODUCT MATERIALS IN ACCORDANCE WITH STANDARD GUIDELINES.

A Research and Development Supervisor (Industrial) will be able to:

1. Work with vendors and manufacturers to ensure that their compliance with quality standards and health regulations and company guidelines;
2. Assist the development and execution of material planning strategies that support objectives such as supplier transitions while maintaining continuity of supply;
3. Understand business processes, systems and technology to analyse problems and develop solutions;
4. Become the material planning process and drive continuous improvement to inventory management;
5. Provide input for Material Resource Planning (MRP); and
6. Support the forecasting and planning strategies in line with Production Schedule.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma in Science or equivalent
- ii. Experience: Minimum 2 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

RESEARCH AND DEVELOPMENT EXECUTIVE (INDUSTRIAL)

A RESEARCH AND DEVELOPMENT EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO WORK CLOSELY WITH TEAMS FOR TECHNICAL DEVELOPMENT, DOCUMENTATION, TESTING, EXPLORING AND DEPLOYMENT OF APPLICATION.

A Research and Development Executive (Industrial) will be able to:

1. Assist Research and Development Manager in contributing with relevant information and proposals to the Management;
2. Monitor Research and Development activities to ensure compliance to standards and specifications;
3. Monitor vendors and manufacturers in compliance to product and material specification;
4. Assist with the development and execution of material planning strategies that support objectives such as supplier transitions while maintaining continuity of supply;
5. Understand business processes, systems and technology to analyse problems and develop solutions;
6. Review documents, such as research programme, manpower planning and specifications to obtain information, such as materials, priorities, and personnel requirements;
7. Confer with establishment personnel, vendors, and manufacturers in ensuring project's scientific resources;
8. Complete status reports, such as research progress, customer feedback and materials inventory; and
9. Assist in identifying and coordinating accredited and non accredited training for the Research and Development team.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Science or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

RESEARCH AND DEVELOPMENT MANAGER (INDUSTRIAL)

A RESEARCH AND DEVELOPMENT MANAGER (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR SAFETY, PURITY AND EFFICACY OF THE OVERALL DIRECTION OF A SPECIFIC PROJECT(S) WITHIN THE R&D DEPARTMENT'S SCHEDULE AND BUDGET.

A Research and Development Manager (Industrial) will be able to:

1. Manage and develop the research and conservation of projects;
2. Manage the science and research aspect of the research and development activities including staff management, communications, projects, scientific reporting and research and development promotion;
3. Identify funding and work opportunities and to develop sponsorship and promotional activities;
4. Observe project activities through reporting system and advise or enforce change as necessary;
5. Manage installation and implement a detailed biotechnical laboratory research work plan to fulfil company's research objective; and
6. Understand business processes, systems and technology to analyse problems and develop solutions.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Science or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

RESEARCH AND DEVELOPMENT PRINCIPAL (INDUSTRIAL)

A RESEARCH AND DEVELOPMENT PRINCIPAL (INDUSTRIAL) IS DESIGNATED TO LEAD AND PROVIDE DIRECTION TO RESEARCH TEAM IN DEVELOPING NEW IDEAS AND SCIENTIFIC DISCOVERIES WHICH CAN BE UTILISED IN THE MANUFACTURE AND APPLICATION OF NEW PRODUCTS. THEY ARE CAPABLE OF UNDERSTANDING AND CONTROLLING THE PROCESSES USED TO PRODUCE THE FINAL PRODUCT.

A Research and Development Principal (Industrial) will be able to:

1. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and manufacturing;
2. Provide professional and personal leadership to research team in Research and Development Department;
3. Plan and formulate aspects of research and development proposals;
4. Review and analyses proposals submitted to determine if benefits derived and possible applications justify expenditures;
5. Approve and submits proposals considered feasible to management for consideration and allocation of funds or allocates funds to department budget;
6. Develop and implement methods and procedures for monitoring projects in order to inform management of current status of each project; and
7. Develop goals and objectives for staff.

Pre-requisites:

- i. Academic qualification: Possess minimum PhD in Science or equivalent.
- ii. Experience: 15 years

Annex 8.1.2:

R&D

(Product Development)



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 3**

LAB TECHNICIAN (INDUSTRIAL)

A LAB TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO HANDLE ROUTINELY SPECIFIC GENERIC EQUIPMENT AND EXPERIMENTAL PROCEDURES. HE/SHE THEREFORE ASSISTS WITH GUIDANCE OF HIS/HER SUPERVISORS IN THE EXECUTION OF SPECIFIC TASKS IN THE GENERATION OF DATA FOR SPECIFIC PROJECT (TASKS) IMPLEMENTED IN THE BIOTECHNOLOGY LABORATORY.

A Lab Technician (Industrial) will be able to:

1. Prepare basic reagents and media for experiments;
2. Prepare experimental samples;
3. Prepare and use generic equipment;
4. Record and update laboratory data/log book;
5. Undertake housekeeping (cleaning, sample disposal, sterilisation, keeps track of consumables and spare parts);
6. Collect sample, maintain equipments and facilities on farm laboratory; and
7. Ensure all activities conform to safety procedures in accordance to the organisation's Standard Operating Procedures (SOP).

Pre-requisites:

- i. Academic qualification: Possess minimum Certificate in Science or equivalent
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

RESEARCH ASSISTANT (INDUSTRIAL)

A RESEARCH ASSISTANT (INDUSTRIAL) IS DESIGNATED TO ASSIST RESEARCH OFFICER AND SCIENTIST TO CONDUCT RESEARCH IN ORDER TO PRODUCE NEW PRODUCT, EVALUATE MATERIALS AND DEVELOP MACHINERY, EQUIPMENT AND PROCESSES TO MANUFACTURE MATERIALS FOR USE IN PRODUCTS THAT MUST MEET SPECIALISED DESIGN AND PERFORMANCE SPECIFICATIONS.

A Research Assistant (Industrial) will be able to:

1. Assist the Research Officer in the development and implementation of the research programme of research to cover each survey component;
2. Assist the Research Officer in the accredited and non-accredited training of the volunteer Research Assistants;
3. Assist the Research Officer in managing the collection and processing of accurate field data, including specimen collection, for all survey components;
4. Assist the Research Officer in managing and supervising the maintenance of the project's scientific resources;
5. Analyzes verbal or statistical data to prepare reports and studies for use by professional workers in variety of areas.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma in Science or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

RESEARCH OFFICER (INDUSTRIAL)

A RESEARCH OFFICER (INDUSTRIAL) IS DESIGNATED TO ASSIST THE SCIENTIST IN CARRYING OUT THE RESEARCH PROJECT. THE RESEARCH OFFICER WILL BE RESPONSIBLE FOR TOOL DEVELOPMENT AND THE DESIGN, COLLECTION AND ANALYSIS OF EVALUATIVE PROJECT DATA. THE RESEARCH OFFICER WILL WORK CLOSELY WITH THE INDUSTRY PARTNERS IN THE PROJECT.

A Research Officer (Industrial) will be able to:

1. Perform research on the project under the direction of the Scientist;
2. Participate in the development of a framework, methods and tools to support research activities;
3. Design evaluative instruments;
4. Analyse project data;
5. Draft scientific reports on the project;
6. Coordinate research activities;
7. Supervise all laboratory staffs under his/her supervision;
8. Provide coaching to all laboratory staffs under his/ her supervision; and
9. Conduct training to all laboratory staffs under his/her supervision.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Science or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

SCIENTIST (INDUSTRIAL)

A SCIENTIST (INDUSTRIAL) IS DESIGNATED TO DEVELOP NEW PRODUCTS AND WORK WITH RESEARCH TEAM TO DEVELOP NEW IDEAS AND SCIENTIFIC DISCOVERIES, WHICH CAN BE UTILISED IN THE MANUFACTURE AND APPLICATION OF NEW PRODUCTS. THEY ARE CAPABLE OF UNDERSTANDING AND CONTROLLING THE PROCESSES USED TO PRODUCE THE FINAL PRODUCT.

A Scientist (Industrial) will be able to:

1. Plan and conducting experiments and analysing or interpreting the results;
2. Discuss research progress with other departments, e.g. production and marketing (in industry);
3. Devise methods for making products at the required scale;
4. Generate data to substantiate claims regarding the safety and efficacy of new products (this applies particularly to the pharmaceutical industrial, food and feed sector);
5. Assist the integration of new products with other commercial areas, including brand development, sales strategy and quality assurance, legal, marketing and manufacturing;
6. Formulate and establish product design and performance objectives, normally in consultation with other functions, including research, marketing and production, as well as contractors, suppliers, and customers;
7. Participate in scientific meetings and conferences in sharing professional experiences with other researchers.

Pre-requisites:

- i. Academic qualification: Possess minimum PhD in Science or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

RESEARCH & DEVELOPMENT PRINCIPAL (INDUSTRIAL)

A RESEARCH AND DEVELOPMENT PRINCIPAL (INDUSTRIAL) IS DESIGNATED TO LEAD AND PROVIDE DIRECTION TO RESEARCH TEAM IN DEVELOPING NEW IDEAS AND SCIENTIFIC DISCOVERIES WHICH CAN BE UTILISED IN THE MANUFACTURE AND APPLICATION OF NEW PRODUCTS. THEY ARE CAPABLE OF UNDERSTANDING AND CONTROLLING THE PROCESSES USED TO PRODUCE THE FINAL PRODUCT.

A Research and Development Principal (Industrial) will be able to:

1. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and manufacturing;
2. Provide professional and personal leadership to research team in R and D Department;
3. Plan and formulates aspects of research and development proposals;
4. Review and analyses proposals submitted to determine if benefits derived and possible applications justify expenditures;
5. Approve and submit proposals considered feasible to management for consideration and allocation of funds or allocates funds to department budget;
6. Develop and implement methods and procedures for monitoring projects in order to inform management of current status of each project; and
7. Develop goals and objectives for staff.

Pre-requisites:

- i. Academic qualification: Possess minimum PhD in Science or equivalent
- ii. Experience: Minimum 15 years

ANNEX 8.2:

PRODUCTION DIVISION

Annex 8.2.1:

**Production
(Administration)**



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

PRODUCTION ASSISTANT (INDUSTRIAL)

A PRODUCTION ASSISTANT (INDUSTRIAL) IS DESIGNATED TO PERFORM ADMINISTRATIVE ACTIVITIES IN ASSISTING SUPERVISOR THAT INCLUDE CHECKING AND RECORDING PROCESS CONDITIONS OR PARAMETERS IN A PRODUCTION ACTIVITIES.

A Production Assistant (Industrial) will be able to:

1. Assist in production planning and scheduling preparation;
2. Prepare daily production report on output, work in progress, production percentage and attendance to production supervisor;
3. Maintain all production records, data and documents;
4. Assist in compiling and review progress and reports to the management; and
5. Key in production data into Material Resources Programme (MRP).

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

PRODUCTION SUPERVISOR (INDUSTRIAL)

A PRODUCTION SUPERVISOR (INDUSTRIAL) IS DESIGNATED TO DIRECTLY SUPERVISE AND COORDINATE ACTIVITIES OF PRODUCTION AND OPERATION WORKERS TO ENSURE SMOOTH AND SAFE OPERATION OF THE PRODUCTION PLANT IN ACHIEVING HIGH PRODUCTIVITY AND QUALITY PRODUCTS ACCORDING TO PRODUCT SPECIFICATION.

A Production Supervisor (Industrial) will be able to:

1. Supervise and coordinate the activities of employees engaged in production or processing of goods;
2. Implement work schedules, assignments, and production sequences, to meet production goals;
3. Supervise standard achievement and production target based on company objectives, equipment and labor availability;
4. Coordinate operations and activities within departments or between departments;
5. Recommend or implement measures to motivate employees and improve production methods, equipment performance, product quality, or efficiency; and
6. Inform maintenance department of any defects and machinery breakdowns.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

PRODUCTION EXECUTIVE (INDUSTRIAL)

A PRODUCTION EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO COORDINATE AND EXPEDITE THE FLOW OF WORK AND MATERIALS WITHIN OR BETWEEN DEPARTMENTS OF AN ESTABLISHMENT ACCORDING TO PRODUCTION SCHEDULE.

A Production Executive (Industrial) will be able to:

1. Review documents, such as production schedules, staffing tables, and specifications to obtain information, such as materials, priorities, and personnel requirements;
2. Communicate with establishment personnel, vendors, and customers for effective processing and shipping;
3. Complete status reports, such as production progress, customer information, and materials inventory;
4. Examine documents, materials, and products, and monitor work processes for completeness, accuracy, and conformance to standards and specifications;
5. Monitor work progress, provide services, such as furnishing permits, tickets, and union information, and directs workers to expedite work flow;
6. Coordinate arrangement for delivery and distribute supplies and parts to expedite flow of materials to meet production schedules; and
7. Coordinate requisition and maintain inventory of materials and supplies to meet production demands.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

PRODUCTION MANAGER (INDUSTRIAL)

A PRODUCTION MANAGER (INDUSTRIAL) IS DESIGNATED TO PRIMARILY BE RESPONSIBLE FOR THE OVERALL SMOOTH OPERATION OF THE MANUFACTURING & PRODUCTION. HE/SHE IS ABLE TO TROUBLESHOOT ALL PROCESS MALFUNCTIONS AND CARRY OUT IMMEDIATE CORRECTIVE ACTIONS. HE/SHE ALSO MANAGES ALL PRODUCTION MATTERS INCLUDING TRAINING, BUDGET, RECRUITMENT AND COORDINATE WITH THE MAINTENANCE AND QUALITY ASSURANCE MANAGERS TO ENSURE OPTIMAL OPERATION.

A Production Manager (Industrial) will be able to:

1. Ensure all production and quality targets are met;
2. Ensure production costs are within budgetary targets;
3. Coordinate with other managers especially Maintenance, Quality Assurance, and higher management departments;
4. Look into the improvement and operation continuously;
5. Conduct troubleshooting exercises regularly; and
6. Ensure all personnel are adequately trained and certified

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 10 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

PRODUCTION DIRECTOR (INDUSTRIAL)

A PRODUCTION DIRECTOR (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR DIRECTION OF COMPANY'S VISION AND MISSION, ANALYSING DATA, PRODUCTION SETTING AND BUDGET PREPARATION.

A Production Director (Industrial) will be able to:

1. Provide professional and personal leadership on the operation and activities of the production division;
2. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and livestock reproduction;
3. Approve and submit proposals to management for consideration and allocation of funds to department budget;
4. Provide data and analyses to group management as well as local management to drive profitability and competitiveness;
5. Responsible for the setting up of product costing, inventory control, valuation and variance analysis;
6. Perform regular forecasts and productivity reviews together with supply chain and sales teams to provide data to management to implement corrective actions during operation review; and
7. Develop and direct goals and objectives.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 15 years

Annex 8.2.2:

Production
(Processing)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

GENERAL WORKER (INDUSTRIAL)

A GENERAL WORKER (INDUSTRIAL) IS UNDER DIRECTION TO PERFORM ROUTINE TASKS IN ENSURING THE WORKING ENVIRONMENT IS ORGANIZE, CLEAN AND TIDY, ASSIST IN A WIDE VARIETY OF BASIC SERVICES, DELIVERY AND MAINTENANCE JOBS AS REQUIRED BY THE NEEDS OF THE ORGANISATION.

A General Worker (Industrial) will be able to:

1. Perform variety of routine tasks to assist in production activities;
2. Keeps equipment and working area clean and orderly;
3. Separates product according to weight, grade, size, and composition of material used to produce product;
4. Adhere to all safety procedures; and
5. Assist in preparation of process materials.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM Certificate
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

PRODUCTION TECHNICIAN (INDUSTRIAL)

A PRODUCTION TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO PERFORM ACTIVITIES SUCH AS CHECKING AND RECORDING PROCESS CONDITIONS OR PARAMETERS IN PRODUCTION ACTIVITIES.

A Production Technician (Industrial) will be able to:

1. Responsible for the operations and maintenance, troubleshooting and smooth running of operational equipments;
2. Responsible in overseeing work in progress (WIP) movements at the production area by monitoring and reporting cycle time and smooth production process;
3. Check and record process parameters in the plant routinely;
4. Maintain and upkeep process plant log book;
5. Inform immediate supervisor of deviation from optimum or normal operating conditions;
6. Inspect raw materials to assure proper ingredient and quality;
7. Assist the superior in manufacturing specific product related operation; and
8. Adhere to all safety procedures.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM or equivalent
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

PROCESS LEADER (INDUSTRIAL)

A PROCESS LEADER (INDUSTRIAL) IS DESIGNATED TO LEAD AND COORDINATE A GROUP OF TECHNICIANS IN MANUFACTURING, PROCESSING, START-UP, SHUT-DOWN, EMERGENCY AND OTHER PRODUCTION ACTIVITIES IN A SAFE AND EFFECTIVE MANNER TO ACHIEVE THE QUALITY AND QUANTITY ACCORDING TO THE PRODUCTION PLAN.

A Process Leader (Industrial) will be able to:

1. Lead and guide team of technician in performing production activities in achieving production target;
2. Lead in process troubleshooting and minor repair to reduce downtime;
3. Perform Health, Safety and Environmental protection activities to ensure safe handling of material and equipment;
4. Assist in the issuance of permit to work system;
5. Lead the operational maintenance work such as equipment cleaning and servicing;
6. Ensure all plant equipment is operated in a manner and condition to produce quality product; and
7. Ensure all subordinates follow Standard Operating Procedures (SOP).

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma in Manufacturing or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

PRODUCTION SUPERVISOR (INDUSTRIAL)

A PRODUCTION SUPERVISOR (INDUSTRIAL) IS DESIGNATED TO DIRECTLY SUPERVISE AND COORDINATE ACTIVITIES OF PRODUCTION AND OPERATION WORKERS TO ENSURE SMOOTH AND SAFE OPERATION OF THE PRODUCTION PLANT IN ACHIEVING HIGH PRODUCTIVITY AND QUALITY PRODUCTS ACCORDING TO PRODUCT SPECIFICATION.

A Production Supervisor (Industrial) will be able to:

1. Supervise and coordinate the activities of employees engaged in production or processing of goods;
2. Implement work schedules, assignments, and production sequences, to meet production goals;
3. Supervise standard achievement and production target based on company objectives, equipment and labor availability;
4. Coordinate operations and activities within departments or between departments;
5. Recommend or implement measures to motivate employees and improve production methods, equipment performance, product quality, or efficiency; and
6. Inform maintenance department of any defects and machinery breakdowns.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

PROCESS TECHNOLOGIST (INDUSTRIAL)

A PROCESS TECHNOLOGIST (INDUSTRIAL) IS DESIGNATED TO DEVELOP AND IMPROVE PROCESSES OR MATERIALS TO ACHIEVE HIGHER OUTPUT AND SMOOTH OPERATION

A Process Technologist (Industrial) will be able to:

1. Lead supervisors in coordinating production operations and activities;
2. Conduct research and analytical studies to develop design or specifications for process improvement;
3. Direct and coordinates activities in designing, producing, creating and fabricating of equipment;
4. Confer with research and engineering personnel to clarify and resolve problems and prepares design modifications as needed;
5. Prepare or directs preparation of product processing through system layout and detailed drawings and schematics;
6. Analyze data to determine feasibility of process optimization;
7. Plan and develops experimental test systems; and
8. Analyze test data and reports to determine if design meets functional and performance specifications.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

PRODUCTION MANAGER (INDUSTRIAL)

A PRODUCTION MANAGER (INDUSTRIAL) IS DESIGNATED TO PRIMARILY BE RESPONSIBLE FOR THE OVERALL SMOOTH OPERATION OF THE MANUFACTURING & PRODUCTION. HE/SHE IS ABLE TO TROUBLESHOOT ALL PROCESS MALFUNCTIONS AND CARRY OUT IMMEDIATE CORRECTIVE ACTIONS. HE/SHE ALSO MANAGES ALL PRODUCTION MATTERS INCLUDING TRAINING, BUDGET, RECRUITMENT AND COORDINATE WITH THE MAINTENANCE AND QUALITY ASSURANCE MANAGERS TO ENSURE OPTIMAL OPERATION.

A Production Manager (Industrial) will be able to:

1. Ensure all production and quality targets are met;
2. Ensure production costs are within budgetary targets;
3. Coordinate with other managers especially Maintenance, Quality Assurance, and higher management departments;
4. look into the improvement and operation continuously;
5. Conduct troubleshooting exercises regularly; and
6. Ensure all personnel are adequately trained and certified

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: minimum 10 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

PRODUCTION DIRECTOR (INDUSTRIAL)

A PRODUCTION DIRECTOR (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR DIRECTION OF COMPANY'S VISION AND MISSION, ANALYZING DATA, PRODUCTION SETTING AND BUDGET PREPARATION.

A Production Director (Industrial) will be able to:

1. Provide professional and personal leadership on the operation and activities of the production division;
2. Oversee the integration of new products with other commercial areas, including brand development, sales strategy, and quality assurance, legal, marketing and livestock reproduction;
3. Approve and submit proposals to management for consideration and allocation of funds to department budget;
4. Provide data and analyses to group management as well as local management to drive profitability and competitiveness;
5. Responsible for the setting up of product costing, inventory control, valuation and variance analysis;
6. Perform regular forecasts and productivity reviews together with supply chain and sales teams to provide data to management to implement corrective actions during operation review; and
7. Develop and direct goals and objectives.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Manufacturing or equivalent
- ii. Experience: minimum 15 years

Annex 8.2.3:

**Production
(Packaging)**



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

GENERAL WORKER (INDUSTRIAL)

A GENERAL WORKER (INDUSTRIAL) IS UNDER DIRECTION TO PERFORM ROUTINE TASKS IN ENSURING THE WORKING ENVIRONMENT IS ORGANIZE, CLEAN AND TIDY, ASSIST IN A WIDE VARIETY OF BASIC SERVICES, DELIVERY AND MAINTENANCE JOBS AS REQUIRED BY THE NEEDS OF THE ORGANISATION.

A General Worker (Industrial) will be able to:

1. Perform variety of routine tasks to assist in production activities;
2. Keeps equipment and working area clean and orderly;
3. Separates product according to weight, grade, size, and composition of material used to produce product;
4. Adhere to all safety procedures; and
5. Assist in preparation of process materials.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM Certificate
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

PACKAGING LEADER (INDUSTRIAL)

A PACKING LEADER (INDUSTRIAL) IS DESIGNATED TO LEAD A TEAM OF GENERAL WORKER IN INSPECTING, SORTING, SAMPLING, WEIGHING AND PACKING OF FINISHED GOODS

A Packaging Leader (Industrial) will be able to:

1. Perform finished goods weighing activities as per standard or customer requirement;
2. Prepare packaging materials according to product specification or customer requirement;
3. Inspect packed product for any defect or damages;
4. Collect sample of finished goods for Quality Assurance assessment;
5. Maintain and upkeep packaging records;
6. Inform immediate supervisor of deviation from optimum or normal operating conditions;
and
7. Adhere to all safety procedures.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

SHIFT LEADER (INDUSTRIAL)

A SHIFT LEADER (INDUSTRIAL) IS DESIGNATED TO LEAD PACKAGING TEAM IN THE SHIFT IN INSPECTING, SORTING, SAMPLING, WEIGHING AND PACKING OF FINISHED GOODS

A Shift Leader (Industrial) will be able to:

1. Ensure finished goods weighing activities as per standard or customer requirement;
2. Ensure availability of packaging materials according to product specification or customer requirement;
3. Review any defect or damages to packed products;
4. Ensure sampling of finished goods for Quality Assurance assessment;
5. Maintain and upkeep packaging log books; and
6. Inform immediate supervisor of deviation from optimum or normal operating conditions;
and
7. Adhere to all safety procedures.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

PRODUCTION SUPERVISOR (INDUSTRIAL)

A PRODUCTION SUPERVISOR (INDUSTRIAL) IS DESIGNATED TO DIRECTLY SUPERVISE AND COORDINATE ACTIVITIES OF PRODUCTION AND OPERATION WORKERS TO ENSURE THE SMOOTH AND SAFE OPERATION OF THE PRODUCTION PLANT IN ACHIEVING HIGH PRODUCTIVITY AND QUALITY PRODUCTS ACCORDING TO PRODUCT SPECIFICATION.

A Production Supervisor (Industrial) will be able to:

1. Supervise and coordinate the activities of employees engaged in production or processing of goods;
2. Implement work schedules, assignments, and production sequences, to meet production goals;
3. Supervise standard achievement and production target based on company objectives, equipment and labor availability;
4. Coordinate operations and activities within departments or between departments;
5. Recommend or implement measures to motivate employees and improve production methods, equipment performance, product quality, or efficiency; and
6. Inform maintenance department of any defects and machinery breakdowns.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma or equivalent
- ii. Experience: Minimum 5 years

ANNEX 8.3:

SALES AND MARKETING

Annex 8.3.1:

Sales and Marketing (Customer Services)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

CUSTOMER SERVICE ASSISTANT (INDUSTRIAL)

A CUSTOMER SERVICE ASSISTANT (INDUSTRIAL) PROVIDE CLERICAL DUTIES FOR CUSTOMER SERVICE OR SALES REPRESENTATIVES. CUSTOMER SERVICE ASSISTANTS FILE INVOICES, TYPE REPORTS, MANAGE PHONE CALLS, HANDLE CUSTOMER INQUIRIES AND RESPOND TO EMAIL. SOMETIMES, THE ASSISTANT MIGHT GREET CLIENTS, SCHEDULE APPOINTMENTS, HELP MAKE A SALE, OR PERHAPS FOLLOW UP WITH CUSTOMERS TO MAKE SURE THE PRODUCT OR SERVICE SOLD HAD BEEN DELIVERED AS PROMISED.

A Customer Service Assistant (Industrial) will be able to:

1. Respond to telephone, mail and face-to-face inquires about the company's products or services following standard procedures;
2. Document details of telephone conversation and actions taken;
3. Complete transactions, records of complaints and actions taken, comments using office software;
4. Field all inquires regarding product, delivery and general services related to customer;
5. Provide for smooth transitions by the coordinating work, schedule and daily processes for optimal efficiency and effectively; and
6. Assist customer to correctly identify issues and determine appropriate priority levels for the executive's response.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

CUSTOMER SERVICE EXECUTIVE (INDUSTRIAL)

A CUSTOMER SERVICE EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO MANAGE THE INITIAL ENQUIRIES ON PRODUCT AND SERVICES. PROVIDE ADMINISTRATIVE AND DATABASE MANAGEMENT FOR CUSTOMER SERVICE FUNCTIONS.

A Customer Service Executive (Industrial) will be able to:

1. Support pre and post-sales activities, coordination, account management and relationship building;
2. Explore, identify and develop new opportunities and developing marketing strategies with action plans to penetrate new market segments;
3. Prepare of service quotations and following up of sales enquiries;
4. Build and maintain effective relationship with customers to increase customer's satisfaction and advocacy;
5. Identify issues and provide solution to customers;
6. Assist in selection, training, motivating and evaluating assigned personnel;
7. Provide or coordinates staff training; and
8. Coach employees to correct deficiencies, implements discipline and termination procedures.

Pre-requisites:

- i. Academic qualification: Possess minimum Advance Diploma or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

CUSTOMER SERVICE MANAGER (INDUSTRIAL)

A CUSTOMER SERVICE MANAGER (INDUSTRIAL) IS DESIGNATED TO MANAGE CUSTOMER SERVICE MANAGEMENT, WORKING CLOSELY WITH THE SUPPLY CHAIN AND FACILITATE INTERNAL AND EXTERNAL COMMUNICATION FOR CUSTOMER SERVICE.

A Customer Service Manager (Industrial) will be able to:

1. Assume full management responsibility for all departmental services and activities including administration of all customer services functions, recommends and administers policies and procedures;
1. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
2. Establish and appropriate service and staffing levels, monitor and evaluate the efficiency and effectiveness of service delivery methods and procedures; allocate resources accordingly;
3. Plan, direct and coordinate, through subordinate level staff, the customer service department's work plan, assign projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meets with key staff to identify and resolve problems;
4. Assess and monitor work load, administrative and support systems, and internal reporting relationships, identify opportunities for improvement, direct and implement changes; and
5. Oversee staff and activities of customer service facilities including the Customer Service Center, and Customer Complaint Center, ensure all operations are conducted in accordance with policy and guidelines.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SALES & MARKETING DIRECTOR (INDUSTRIAL)

A SALES MARKETING DIRECTOR (INDUSTRIAL) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A Sales and Marketing Director (Industrial) will be able to:

1. Direct and coordinate company sales and marketing functions;
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyse and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisites:

- i. Academic qualification: Possess minimum Master Degree in related field
- ii. Experience: Minimum 10 years

Annex 8.3.2:

Sales and Marketing (Technical Services)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

TECHNICAL SERVICE ASSISTANT (INDUSTRIAL)

A TECHNICAL SERVICE ASSISTANT (INDUSTRIAL) PROVIDE CLERICAL DUTIES FOR TECHNICAL SERVICE OR SALES REPRESENTATIVES. TECHNICAL SERVICE ASSISTANTS TYPE REPORTS, MANAGE PHONE CALLS, HANDLE TECHNICAL INQUIRIES AND RESPOND TO EMAIL. SOMETIMES, THE ASSISTANT MIGHT GREET CLIENTS, SCHEDULE APPOINTMENTS, HELP MAKE A SALE, OR PERHAPS FOLLOW UP WITH CUSTOMERS TO MAKE SURE THE PRODUCT OR SERVICE SOLD HAD BEEN DELIVERED AS PROMISED.

A Technical Service Assistant (Industrial) will be able to:

1. Respond to telephone, mail and face-to-face inquires about the company's products or services following standard procedures;
2. Document details of telephone conversation and actions taken;
3. Complete transactions, records of complaints and actions taken, comments using office software;
4. Field all inquires regarding product, delivery and general services related to customer;
5. Provide for smooth transitions by the coordinating work, schedule and daily processes for optimal efficiency and effectively; and
6. Assist customer to correctly identify issues and determine appropriate priority levels for the executive's response.

Pre-requisites:

- i. Academic qualification: Possess minimum Technical Certificate in related field
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

TECHNICAL SERVICE EXECUTIVE (INDUSTRIAL)

A TECHNICAL SERVICE EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO RESPONSIBLE FOR HANDLING THE TECHNICAL SUPPORT FOR NEW OR EXISTING CLIENTS. TECHNICAL EXECUTIVE HAS TO COLLABORATE WITH OTHER TEAMS REGARDING ANY PRODUCT OR SERVICE TECHNICAL ISSUES.

A Technical Service Executive (Industrial) will be able to:

1. Handle customer technical queries and complaint;
2. Perform research and analysis in order to resolve customer issues;
3. Provide technical support in the installation, application, commissioning and after sales trouble shooting related to product or services to customers;
4. Confer with other departments, supplier or vendors in identifying, analysing and resolving customer issues;
5. Provide technical training presentation and seminar on product safe application at customer's location;
6. Utilise all available tools such as service report, manual, customer feed back and relevant database to improve product or service quality; and
7. Develop and maintain highest level of technical knowledge and networking.

Pre-requisite:

- i. Academic qualification: Possess minimum Degree in related field.
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

TECHNICAL SERVICE MANAGER (INDUSTRIAL)

A TECHNICAL SERVICE MANAGER (INDUSTRIAL) IS DESIGNATED TO PROVIDE TECHNICAL DIRECTION FOR THE DEVELOPMENT, DESIGN, AND SYSTEMS INTEGRATION FOR CLIENT ENGAGEMENT FROM DEFINITION PHASE THROUGH IMPLEMENTATION. HE/SHE MAY APPLY SIGNIFICANT KNOWLEDGE OF INDUSTRY TRENDS AND DEVELOPMENTS TO IMPROVE SERVICE TO OUR CLIENTS. REVIEW WORK OF DEVELOPMENT TEAM.

A Technical Service Manager (Industrial) will be able to:

1. Responsible for all departmental services and activities including administration of all technical services functions, recommend and administer policies and procedures;
2. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
3. Establish and appropriate service and staffing levels, monitor and evaluate the efficiency and effectiveness of service delivery methods and procedures, allocate resources accordingly;
4. Plan, direct and coordinate, through subordinate level staff, the customer service Department's work plan, assigns projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meets with key staff to identify and resolve problems;
5. Manage technical support in the installation, application, commissioning and after sales trouble shooting related to product or services to customers;
6. Provide counsel and advice to other departments, supplier or vendors in identifying, analysing and resolving customer issues;
7. Organise technical training presentation and seminar on product safe application at customer's location; and
8. Develop and maintain highest level of technical knowledge, customer relation and networking.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SALES AND MARKETING DIRECTOR (INDUSTRIAL)

A SALES MARKETING DIRECTOR (INDUSTRIAL) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A Sales and Marketing Director (Industrial) will be able to:

1. Direct and coordinate company sales and marketing functions.
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyze and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisites:

- i. Academic qualification: Possess minimum Master Degree in related field
- ii. Experience: Minimum 10 years

Annex 8.3.3:

**Sales and Marketing
(Marketing)**



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

MARKETING ASSISTANT (INDUSTRIAL)

A MARKETING ASSISTANT (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR SUPPORTING THE DEVELOPMENT AND EXECUTION OF THE MARKETING PLAN AND RESEARCH MARKET CONDITIONS IN LOCAL, REGIONAL, OR NATIONAL AREAS TO DETERMINE POTENTIAL SALES OF A PRODUCT OR SERVICE.

A Marketing Assistant (Industrial) will be able to:

1. Collate and tabulate market research and conditions in local, regional, or national area for potential sales of product or service analysis;
2. Assist on marketing activities and ensure the proper use of logos and brand as per guidelines;
3. Establish and maintain a centralised archive of presentations, marketing materials and communications that is accessible to various functional groups internally;
4. Assist in financial responsibilities: estimating, billing, reporting and invoicing for marketing fees and expenses, cooperative advertising requests and documentation;
5. Create and distribute rollout communications for program updates, product enhancements, direct marketing programs and sales tools; and
6. Maintain and update marketing plan flowchart.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

MARKETING EXECUTIVE (INDUSTRIAL)

A MARKETING EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO INVOLVE IN DEVELOPING MARKETING CAMPAIGNS THAT PROMOTE A PRODUCT, SERVICE OR IDEA. THE ROLE INCLUDES PLANNING, ADVERTISING, PUBLIC RELATIONS, ORGANISING EVENTS, PRODUCT DEVELOPMENT, DISTRIBUTION, SPONSORSHIP AND RESEARCH.

A Marketing Executive (Industrial) will be able to:

1. Create marketing plans geared toward end users for each key product within portfolio, in line with strategy and targets and within budget;
2. Examine and analyses statistical data to forecast future marketing trends and to identify potential markets;
3. Work with the business innovations department to develop new ideas for reaching customer's markets;
4. Communicate to the rest of marketing team about new innovations and how they can be used to leverage marketing efforts;
5. Assist the manager in managing the product or service branding, communication and promotion; and
6. Assist the manager in managing the company's product or service communicated through media channels.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Marketing
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

MARKETING MANAGER (INDUSTRIAL)

A MARKETING MANAGER (INDUSTRIAL) IS DESIGNATED TO PLAN, DIRECT, AND COORDINATES ACTIVITIES TO DETERMINE THE DEMAND FOR PRODUCTS AND SERVICES OFFERED AND IDENTIFY POTENTIAL CUSTOMERS. DEVELOP MARKETING AND DISTRIBUTION STRATEGIES WITH THE GOAL OF MAXIMIZING PROFITS OR SHARE OF THE MARKET WHILE ENSURING CUSTOMERS ARE SATISFIED. MONITOR TRENDS THAT INDICATE THE NEED FOR NEW PRODUCTS AND SERVICES.

A Marketing Manager (Industrial) will be able to:

1. Develop marketing strategy, based on knowledge of establishment policy, nature or market, and cost and markup factors;
2. Establish research methodology and design format for data gathering, such as surveys, opinion polls, or questionnaires;
3. Analyse business developments and consults trade journals to monitor market trends and determine market opportunities for products;
4. Coordinate promotional activities and trade exhibition to market products and services;
5. Plan, direct and coordinate, through subordinate level staff, the customer service Department's work plan, assign projects and programmatic areas of responsibility, reviews and evaluate work methods and procedures, meet with key staff to identify and resolve problems;
6. Confer with legal staff to resolve problems, such as copyright infringement and royalty sharing with outside producers and distributors;
7. Prepares report of marketing activities; and
8. Assists Sales and Marketing Director in the development and implementation of marketing plans for products.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Marketing
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

SALES & MARKETING DIRECTOR (INDUSTRIAL)

A SALES MARKETING DIRECTOR (INDUSTRIAL) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A Sales & Marketing Director (Industrial) will be able to:

1. Direct and coordinate company sales and marketing functions;
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyse and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisites:

- i. Academic qualification: Possess minimum Master Degree in related field
- ii. Experience: Minimum 10 years

Annex 8.3.4:

Sales and Marketing
(Sales)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

SALES ASSISTANT (INDUSTRIAL)

A SALES ASSISTANT (INDUSTRIAL) IS DESIGNATED TO PERFORM ACTIVITIES ASSOCIATED WITH SELLING, STOCKING AND ORDERING PRODUCT OR SERVICES IN A RETAIL OR SALES OPERATION.

A Sales Assistant (Industrial) will be able to:

1. Assist in responding to customer's queries and complaint on product or services;
2. Assist to prepare bidding document, proposal and costing;
3. Check inventory periodically to obtain stock information;
4. Collate and tabulate sales performance through invoices, sales prospect, and sales plan;
5. Provide sales administration duties such as issuance of credit/debit note, invoices, sales order and correspondence; and
6. Maintain cordial connection to customer's representative to maintain sales and receive payment collection.

Pre-requisite:

- i. Academic qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

SALES EXECUTIVE (INDUSTRIAL)

A SALES EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO SELL PRODUCTS AND SERVICES TO NEW AND EXISTING CUSTOMERS.THEY ARE ALSO INVOLVED WITH IDENTIFYING NEW MARKETS AND BUSINESS OPPORTUNITIES.

A Sales Executive (Industrial) will be able to:

1. Implement sale strategies for products and services;
2. Build goodwill and strong relationship with customer by maintaining regular visits and contact;
3. Prepare quotation and follow up with customer to secure order and advice customer on selection of product or service;
4. Responsible for customer's satisfaction level and customer's audit;
5. Deliver presentations of products at customer sites and at conferences and exhibitions;
6. Maintain contact with existing and potential customers to promote sales and deliver detailed account plans; and
7. Observe customer feedback and complaint on product quality and delivery.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Sales and Marketing or elated field
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

SALES MANAGER (INDUSTRIAL)

A SALES MANAGER (INDUSTRIAL) IS DESIGNATED TO PLAN, DIRECT, AND COORDINATE SALES ACTIVITIES BY ESTABLISHING SALES TERRITORIES, QUOTAS, GOALS, AND TRAINING PROGRAMS FOR SALES REPRESENTATIVES. ANALYZE SALES STATISTICS TO DETERMINE SALES POTENTIAL, INVENTORY REQUIREMENTS AND CUSTOMER PREFERENCES.

A Sales Manager (Industrial) will be able to:

1. Responsible for all departmental services and activities including administration of all customer services functions, recommends and administers policies and procedures;
2. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
3. Plan, direct and coordinate, through subordinate level staff, the customer service department's work plan, assign projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meet with key staff to identify and resolve problems;
4. Plan and priorities sales activities and customer/prospect contact towards achieving targeted business plan;
5. Manage business portfolio, product, services and sales territory according to market strategy, pricing, margin and profit target;
6. Monitor and report on market and competitor's activities and provide relevant report and market information; and
7. Manage collection of outstanding debts according to agreed credit terms.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Sales and Marketing or related field
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

SALES & MARKETING DIRECTOR (INDUSTRIAL)

A SALES & MARKETING DIRECTOR (INDUSTRIAL) IS DESIGNATED TO PROVIDE LEADERSHIP AND COORDINATION OF COMPANY SALES AND MARKETING FUNCTIONS.

A Sales & Marketing Director (Industrial) will be able to:

1. Direct and coordinate company sales and marketing functions;
2. Direct and oversee the company marketing function to identify and develop new customers for products and services;
3. Research and develop strategies and plans which identify marketing opportunities new project development and increase sales performance;
4. Analyze and evaluate the effectiveness of sale, methods, costs, and results;
5. Plan and coordinate customer affairs, and communication efforts, to include customer relations and community outreach;
6. Establish and implement short and long-range goals, objectives, policies, and operating procedures; and
7. Recommend and administer policies and procedures to enhance business performance.

Pre-requisites:

- i. Academic Qualification: Possess minimum Master Degree in Sales & Marketing or elated field
- ii. Experience: Minimum 10 years

ANNEX 8.4:

LOGISTICS AND WAREHOUSING DIVISION

Annex 8.4.1:

Logistics and Warehousing (Logistic)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

STORE HANDLER (INDUSTRIAL)

A STORE HANDLER (INDUSTRIAL) IS DESIGNATED TO RECEIVE, STORE, HANDLE AND DELIVER MATERIALS, EQUIPMENT AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Store Handler (Industrial) will be able to:

1. Receive, count, deliver and store materials and equipments to designated area, and determine sequence and release of back orders according to stock availability;
2. Record nature, quantity, value, or location of material, supplies, or equipment received, shipped, used, or issued to workers;
3. Clean and maintain supplies, tools, equipments and instruments and storage areas to ensure compliance to safety regulations;
4. Apply labels or stickers to finished goods for distribution or export; and
5. Check specifications prior to delivery and receiving materials and equipments.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM Certificate equivalent
- ii. Basic Command in English and Malay Language



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

FORKLIFT DRIVER (INDUSTRIAL)

FORKLIFT DRIVERS (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE IN MOVING MATERIALS OR EQUIPMENT IN MEETING JOB ORDER.

A Forklift Driver (Industrial) will be able to:

1. Perform stuffing and unstuffing from truck or containers;
2. Transport material and equipment for storage purpose;
3. Inspect forklift regularly according to the Occupational Safety and Health;
4. Stack, arrange and retrieve material or equipment at storage area; and
5. Prepare pallets or materials to put on trucks or containers for delivery based on order form.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM or equivalent
- ii. Experience: Not necessary
- iii. Possess valid driving licenses for forklift operation.



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

STOREKEEPER (INDUSTRIAL)

A STOREKEEPER (INDUSTRIAL) IS DESIGNATED TO COORDINATE ACTIVITIES INVOLVED IN RECEIVING, STORAGING, AND ISSUEING MATERIALS, EQUIPMENT, AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Storekeeper (Industrial) will be able to:

1. Prepares periodic, special, or perpetual inventory of stock;
2. Maintains the storage area according to Standard Operation Procedure (SOP);
3. Receive and inspect all incoming materials and reconcile with delivery order (DO);
4. Supervise and organiSe his/her subordinate based on their work order;
5. Maintain, update and key in inventories, loading and unloading into material requirement planning system; and
6. Compare records with sales orders, invoices, or requisitions to verify accuracy and receipt of items.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

LOGISTIC ASSISTANT (INDUSTRIAL)

A LOGISTIC ASSISTANT (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE IN PREPARING DOCUMENTATION AND ADMINISTRATIVE FUNCTION FOR SHIPPING AND CUSTOM CLEARANCE.

A Logistic Assistant (Industrial) will be able:

1. Prepare shipping documentation such as packing details, invoices and bar coding;
2. Prepare documentation for custom clearance relating to import or export of good or equipment;
3. To coordinate with personnel from warehouse logistic provider and shipping agents to ensure on time delivery;
4. Prepare shipment documentation to ensure all shipment arrived and delivered in timely manner;
5. Carry out supporting activities in all level of time management for shipping activities in order to ensure smooth transition;
6. Handle all customers' needs for transportation order, quotation and any project cargo requirements and specification;
7. Respond to custom exemption application and renewal of licenses;
8. Interact with suppliers in customers regarding shipping problems or enquiries; and
9. Handle import/export shipment, custom clearance and provide logistic support.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma in Logistics
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

LOGISTIC EXECUTIVE (INDUSTRIAL)

A LOGISTIC EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE IN PLANNING, COORDINATING, IMPLEMENTING AND MANAGING ON LOGISTIC AND TRANSPORTATION ACTIVITIES.

A Logistic Executive (Industrial) will be able to:

1. Monitor and manage vendor performance to ensure all shipments arrived and delivered in timely manner;
2. Closely monitor on monthly closing and billing process;
3. Monitor all customers need for transportation order, quotation and any project cargo requirement and specification;
4. Prepare reports for monthly management analysis;
5. Ensure continuous improvement for system to increase efficiency and effectiveness of operation; and
6. Monitor supplier and rate their performance.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Logistics
- ii. Experience: minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

LOGISTIC MANAGER (INDUSTRIAL)

A LOGISTIC MANAGER (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR THE MANAGEMENT OF LOGISTICS SERVICE BY PROVIDING LEADERSHIP, FOCUSING ON CUSTOMER REQUIREMENTS, EFFECTIVE OPERATIONAL PERFORMANCE AND A MOTIVATED WORKFORCE.

A Logistic Manager (Industrial) will be able to:

1. To maximise performance of the logistics service by providing leadership, focusing on customer's requirements, effective operational performance and a motivated workforce;
2. Support the profitable growth of the business through efficient management of logistics service achieving customer satisfaction;
3. Liaise with customers, customer service and sales staff to understand customer logistics requirements through analysis of performance, customer feedback and complaint;
4. Adhere to the transportation and customs requirements of country, regional and company's corporate policy directives at all times;
5. Develop and carry-out training programs that support the development of personnel of logistics;
6. Monitor logistics cost and expenditure to ensure costs efficiency in operations management;
7. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
8. Establish and appropriate service and staffing levels, monitor and evaluate the efficiency and effectiveness of service delivery methods and procedures, allocate resources accordingly; and
9. Plan, direct and coordinate, through subordinate level staff, the Warehouse Department's work plan, assign projects and programmatic areas of responsibility, review and evaluate work methods and procedures, meet with key staff to identify and resolve problems.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Logistic
- ii. Experience: Minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SUPPLY CHAIN DIRECTOR (INDUSTRIAL)

A SUPPLY CHAIN DIRECTOR (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR THE DEVELOPMENT AND IMPLEMENTATION OF SUPPLY CHAIN STRATEGIES TO MEET BUSINESS TARGET.

A Supply Chain Director (Industrial) will be able to:

1. Lead Logistics, Warehousing and purchasing functions of the organisation;
2. Train Supply Chain personnel on Strategic Sourcing and delivery processes to ensure compliance;
3. Ensure that all necessary purchasing parameters (vendor data, contracts) are given and stored properly and take appropriate actions whenever necessary;
4. Prepare analysis and statistics to control and support the strategy for sourcing and delivery strategy and the strategic planning;
5. Ensure the availability of up to date supply market information;
6. Ensure the establishment of a competitive supply chain which provides sustainable reductions of total cost and integrates seamless into the purchasing and production (assembly) processes;
7. Search, select and qualify preferred suppliers to support the business requirements.
8. Proactive improvement of the quality along the entire supply chain; and
9. Create and maintain global contract system, create and execute competence development plans.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 10 years

Annex 8.4.2:

Logistics and Warehousing (Warehousing)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 1

STORE HANDLER (INDUSTRIAL)

A STORE HANDLER (INDUSTRIAL) IS DESIGNATED TO RECEIVE, STORE, HANDLE AND DELIVER MATERIALS, EQUIPMENT AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Store Handler (Industrial) will be able to:

1. Receive, count, deliver and store materials and equipments to designated area, and determines sequence and release of back orders according to stock availability;
2. Record nature, quantity, value, or location of material, supplies, or equipment received, shipped, used, or issued to workers;
3. Clean and maintain supplies, tools, equipments and instruments and storage areas to ensure compliance to safety regulations;
4. Apply labels or stickers to finished goods for distribution or export; and
5. Check specifications prior to delivery and receiving materials and equipments.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM Certificate equivalent



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

FORKLIFT DRIVER (INDUSTRIAL)

FORKLIFT DRIVERS (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE IN MOVING MATERIALS OR EQUIPMENT TO MEET JOB ORDER.

A Forklift Driver (Industrial) will be able to:

1. Perform stuffing and unstuff from truck or containers;
2. Transport material and equipment for storage purpose;
3. Inspect forklift regularly According to the Occupational Safety and Health;
4. Stack, arrange and retrieve material or equipment at storage area; and
5. Prepare pallets or materials to put on trucks or containers for delivery based on order form.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM or equivalent
- ii. Experience: Not Necessary
- iii. Possess valid driving licenses for forklift operation.



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

STOREKEEPER (INDUSTRIAL)

A STOREKEEPER (INDUSTRIAL) IS DESIGNATED TO COORDINATE ACTIVITIES INVOLVED IN RECEIVING, STORAGING, AND ISSUEING MATERIALS, EQUIPMENT, AND OTHER ITEMS FROM STORAGE AREA OR WAREHOUSE.

A Storekeeper (Industrial) will be able to:

1. Prepare periodic, special, or perpetual inventory of stock;
2. Maintain the storage area according to Standard Operation Procedure (SOP);
3. Receive and inspects all incoming materials and reconciles with delivery order (DO);
4. Supervise and organise his/her subordinate based on their work order;
5. Maintain, update and key in inventories, loading and unloading into material requirement planning system; and
6. Compare records with sales orders, invoices, or requisitions to verify accuracy and receipt of items.

Pre-requisites:

- i. Academic qualification: Possess minimum SPM or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

WAREHOUSE SUPERVISOR (INDUSTRIAL)

A WAREHOUSE SUPERVISOR (INDUSTRIAL) IS DESIGNATED TO SUPERVISE AND COORDINATE ACTIVITIES OF WORKERS ENGAGED IN RECEIVING, TRANSPORTING, STACKING, ORDER FILLING, SHIPPING, AND MAINTAINING STOCK RECORDS IN WAREHOUSE.

A Warehouse Supervisor (Industrial) will be able to:

1. Supervise and coordinate activities of workers engaged in receiving, transporting, stacking, order filling, shipping, and maintaining stock records in warehouse;
2. Complete warehouse operational requirements by scheduling and assigning employees, following up on work results;
3. Control inventory levels by reviewing data recorded in tracking system, retrieving data, designing reports and directing corrective actions occur to manage the inventory levels;
4. Maintain professional and technical knowledge of staff by consulting with workers, managers and suppliers to ensure the procedures are maintained;
5. Maintain historical record keeping by tracing historical records of items to determine reasons for discrepancies between inventory and stock control records; and
6. Provide support to departmental staff by researching and resolving discrepancies, recommending remedial actions to manage inventory levels, and disbursement of inventory.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

WAREHOUSE EXECUTIVE (INDUSTRIAL)

A WAREHOUSE EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO ASSIST THE WAREHOUSE MANAGER IN OVERSEEING THE DAILY OPERATION OF THE WAREHOUSE, INCOMING, STORAGE AND OUTGOING ACTIVITIES BY ADHERING TO FIRST IN FIRST OUT (FIFO) PRINCIPLE.

A Warehouse Executive (Industrial) will be able to :

1. Assist in the management of raw materials inventory; finished goods, production material movement on time and accurately;
2. Plan, monitor and manage the inventory of stock item include store layout and inventory control;
3. Ensure proper arrangement and storage of inventory stock through Good Storage Practice (GSP);
4. Implement store procedures control system to ensure smooth flow of materials;
5. Analyze and solve problems on stock discrepancies;
6. Improve on warehouse operation effectiveness and efficiency;
7. Co-ordinate warehouse activities by overseeing, receiving, storage, picking and packing;
8. Ensure shipments of correct orders and quantities reach destination in timely manner;
9. Ensure all warehouse facilities, equipments are properly maintained and comply with safety requirement; and
10. Responsible for conducting stock checks, variance investigation and reconciliations.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Logistic or related field



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

WAREHOUSE MANAGER (INDUSTRIAL)

A WAREHOUSE MANAGER (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR THE EFFICIENT OPERATION AND CONTINUES IMPROVEMENT OF THE WAREHOUSING AND DISTRIBUTION OPERATION TO MEET BUSINESS REQUIREMENT.

A Warehouse Manager (Industrial) will be able to:

1. Plan, develop, organise and deploy resources to optimise warehousing and distribution activities;
2. Ensure stock accuracy and credibility by conducting regular stock check;
3. Ensure the availability of all documents pertaining to movement of raw material to finish product and the consumption throughout the operation;
4. Ensure proper arrangement and storage of inventory stock through Good Storage Practice (GSP);
5. Ensure compliance of good housekeeping and safety standard;
6. Analyzing data to monitor performance and plan improvement;
7. Manage the development and implementation of departmental goals, objectives, policies and priorities for each assigned service area;
8. Establish and appropriate service and staffing levels, monitor and evaluate the efficiency and effectiveness of service delivery methods and procedures, allocate resources accordingly;
9. Plan, direct and coordinate, through subordinate level staff of Warehouse Department's;
10. Review and evaluates work methods and procedures; and
11. Meet with key staff to identify and resolve problems.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Logistic or related field
- ii. Experience: Minimum 10 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

SUPPLY CHAIN DIRECTOR (INDUSTRIAL)

A SUPPLY CHAIN DIRECTOR (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR THE DEVELOPMENT AND IMPLEMENTATION OF SUPPLY CHAIN STRATEGIES TO MEET BUSINESS TARGET.

A Supply Chain Director (Industrial) will be able to:

1. Lead logistics, warehousing and purchasing functions of the organisation;
2. Train Supply Chain personnel on Strategic Sourcing and delivery processes to ensure compliance;
3. Ensure that all necessary purchasing parameters (vendor data, contracts) are given and stored properly and take appropriate actions whenever necessary;
4. Prepare analysis and statistics to control and support the strategy for sourcing and delivery strategy and the strategic planning;
5. Ensure the availability of up to date supply market information;
6. Ensure the establishment of a competitive supply chain which provides sustainable reductions of total cost and integrates seamless into the purchasing and production (assembly) processes;
7. Search, select and qualify preferred suppliers to support the business requirements.
8. Proactive improvement of the quality along the entire supply chain; and
9. Creating and maintaining global contract system, create and execute competence development plans.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Logistic or related field
- ii. Experience: Minimum 10 years

ANNEX 8.5:

QUALITY ASSURANCE/ QUALITY CONTROL/ QUALITY MANAGEMENT (QA/QC/QM) DIVISION

Annex 8.5.1:

QA/ QC/ QM
(Quality Assurance)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

QUALITY ASSURANCE ASSISTANT (INDUSTRIAL)

A QUALITY ASSURANCE ASSISTANT (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR THE QUALITY TESTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING AS PER SPECIFICATION AND PARAMETERS RELATED TO THE REVIEW AND APPROVAL OF PRODUCTS OR MATERIAL IN STRICT ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, CURRENT GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES, AND REGULATORY REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance Assistant (Industrial) will be able to:

1. Carry-out daily Quality Assurance testing for in-coming, in-process and finished goods as per specification and parameters;
2. Record all test and analysis using written log or specific programme and software;
3. Ensure all test, monitoring and measuring equipment are in good condition and calibrated;
4. Assist in conducting audit for process or quality management system;
5. Analyze product quality defect through investigation, test and trial; and
6. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre – requisites:

- i. Qualification : Minimum Diploma in related field
- ii. Experience : Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

QUALITY ASSURANCE EXECUTIVE (INDUSTRIAL)

A QUALITY ASSURANCE EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE TO WORK TOGETHER WITH QUALITY ASSURANCE TEAM RELATED TO THE REVIEW AND APPROVAL OF PRODUCTS OR MATERIAL IN STRICT ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, CURRENT GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES, AND REGULATORY REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance Executive (Industrial) will be able to:

1. Coordinate and organise the daily activities of the Quality Assurance Departments and assigned staff in accordance with the organisation's policies, procedures and legal requirements;
2. Assist in providing QA input during design and development phases to ensure all requirements are properly documented;
3. Assist in responding to Quality Assurance-related inquiries/complaint from management, customers, suppliers and regulatory agencies;
4. Perform and document investigations, corrective and preventative actions; tracking; trending; and maintenance of historical files;
5. Perform material review activities; identification, investigation, and closeout of manufacturing non-conformances;
6. Analyse and review manufacturing deviations;
7. Organise personnel training ensuring documented training records in an orderly manner that facilitates easy retrieval and review;
8. Organize production materials testing for acceptability in accordance with written procedures.
9. Perform internal and external quality audits;
10. Participate in finalizing inspections and audits to ensure compliance with GMPs, SOPs, company practices and procedures and governmental regulations, including safety rules and regulations; and
11. Assist in preparing periodic reports for business and management.

Pre –requisites:

- i. Qualification : Minimum Degree in related field
- ii. Experience : Not necessary



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

QUALITY ASSURANCE MANAGER (INDUSTRIAL)

THE QUALITY ASSURANCE MANAGER (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR ALL OPERATIONAL ASPECTS OF THE QUALITY ASSURANCE DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT—SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance Manager (Industrial) will be able to:

1. Lead, manage, coordinate and prioritise the daily activities of the Quality Assurance Departments and assigned staff in accordance with the organisation's policies, procedures and legal requirements;
2. Establish and maintain the Quality Management System or other applicable standards;
3. Conduct internal and external quality audit to ensure company and supplier operations comply with standard;
4. Guide the operations team for all quality matters, e.g. preparing work instructions, reviewing quality records, etc.;
5. Develop, implement and maintain the Quality Management Plan;
6. Work closely with the purchasing section to evaluate & qualify vendors;.
7. Assess customer's complaints and recommend corrective action;
8. Manage customer & certification audits;.
9. Drive Continuous Improvement projects/initiatives for the organization;
10. Ensures that all personnel are adequately trained, and where required, certified;
11. Ensures that training is appropriately documented training records in an orderly manner that facilitates easy retrieval and review; and
12. Prepares periodic reports for business and management.

Pre-requisites:

- i. Qualification : Minimum Degree in related field
- ii. Experience : Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

**QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT
DIRECTOR (INDUSTRIAL)**

QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT DIRECTOR (INDUSTRIAL) IS DESIGNATED TO DIRECT, LEAD AND FOR ALL OPERATIONAL ASPECTS OF THE QUALITY MANAGEMENT DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance /Quality Control/Quality Management Director (Industrial) will be able to:

1. Direct, lead and coordinate company's Quality Assurance, Quality Control and Quality Management plans, systems and activities;
2. Responsible for all product quality issues, including managing internal and external communication on product qualities;
3. Identify on-going quality issues and make recommendations to improve current processes;
4. Interface with customers, suppliers, engineering and manufacturing groups on quality related issues;
5. Provide training in statistical concepts and techniques;
6. Establish, review and approve quality control methods and procedures;
7. Collaborate with other departments to ensure the establishment of comprehensive quality specifications of current and new products with due compliance to established parameters;
8. Oversee vendor rating to ensure that vendors are sufficiently competent to provide quality products and that are produced under a controlled Quality Control systems; and
9. Advise in development of business systems and processes beyond product and services quality.

Pre-requisites:

- i. Qualification : Minimum Masters Degree in related field
- ii. Experience : Minimum 10 years

Annex 8.5.2:

QA/ QC/ QM
(Quality Control)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

QUALITY CONTROL INSPECTOR (INDUSTRIAL)

A QUALITY CONTROL INSPECTOR (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR THE PHYSICAL INSPECTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING QUALITY TESTING AS PER SPECIFICATION AND PARAMETERS.

A quality control inspector (industrial) will be able to:

1. Collect material sample for daily in-coming, in-process, finished goods and outgoing quality testing as per physical specification and parameters;
2. Ensure of effective use of all inspection and measuring equipments;
3. Ensure proper reporting and filing of inspection and testing results / data;
4. Report any off-specification immediately to superior; and
5. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre –requisites:

- i. Qualification : Minimum SPM certificate
- ii. Experience : Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

QUALITY CONTROL TECHNICIAN (INDUSTRIAL)

A QUALITY CONTROL TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO RESPONSIBLE FOR THE INSPECTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING QUALITY TESTING AS PER SPECIFICATION AND PARAMETERS. CONDUCT MINOR TROUBLESHOOTING FOR EQUIPMENT AND MATERIAL.

A quality control technician (industrial) will be able to:

1. Collect material sample for daily in-coming, in-process, finished goods and outgoing quality testing as per specification and parameters;
2. Ensure of effective use of all inspection and measuring equipments in quality control room;
3. Ensure proper reporting and filing of inspection and testing results / data;
4. Perform initial analysis on test and inspected activities and to report any off-specification immediately to superior;
5. Perform minor troubleshooting for off-specification material with guidance from QC Executive; and
6. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre-requisites:

- i. Qualification : Minimum Certificate in Science or related fields
- ii. Experience : Min 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

QUALITY CONTROL ASSISTANT (INDUSTRIAL)

A QUALITY CONTROL ASSISTANT (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE IN INSPECTING AND ANALYSING QUALITY TESTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING AS PER SPECIFICATION AND PARAMETERS IN STRICT ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, CURRENT GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES, AND REGULATORY REQUIREMENTS WHEREVER APPLICABLE.

A Quality Control Assistant (Industrial) will be able to:

1. Carry-out daily Quality Control testing for in-coming, in-process and finished goods as per specification and parameters;
2. Record all test and analysis using written log or specific programme and software ;
3. Ensure all test, monitoring and measuring equipment are in good condition and calibrated;
4. Assist in conducting audit for process or quality management system;
5. Analyze product quality defect through investigation, test and trial; and
6. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination.

Pre – requisites:

- i. Qualification : Minimum Diploma in related fields
- ii. Experience : Minimum 2 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

QUALITY CONTROL EXECUTIVE (INDUSTRIAL)

A QUALITY CONTROL EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO PERFORM RESPONSIBLE TO LEAD THE QUALITY CONTROL TEAM IN INSPECTING AND ANALYZING QUALITY TESTING OF INCOMING, IN-PROCESS, FINISHED GOODS AND OUTGOING AS PER SPECIFICATION AND PARAMETERS.

A Quality Control Executive (Industrial) will be able to:

1. Supervise and monitor QC Assistants performance on daily Quality Control testing for incoming, in-process and finished goods as per specification and parameters;
2. Review all test and analysis through physical log or specific programme and software;
3. Review calibration and maintenance of all test, monitoring and measuring equipment are in good condition and calibrated;
4. Conduct audit for process or quality management system;
5. Review analysis of product quality defect investigation, test and trial;
6. Provide technical training to QC team regarding QC tools, equipment, investigation, test and trial method;
7. Adhere to safe work procedure and/or Good Manufacturing Practices to avoid exposure or product contamination;
8. Conduct quality system audits to ensure the effectiveness of quality system;
9. Provide technical training to management and employees regarding the adequacy of safety program, operational methods and personnel practices, maintenance of safety and cleanliness practices and GMP requirement;
10. Conduct customer complaint investigation to resolve root cause of non-conformance;
11. Participate in validation activities in support of continuous improvement programs; and
12. Prepare written document such as work instruction, specification, test method, sampling plan forms, etc which may impact product quality and safety and initiate periodic review of those documents.

Pre – requisites:

- i. Qualification : Minimum Degree in related field
- ii. Experience : Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

QUALITY CONTROL MANAGER (INDUSTRIAL)

A QUALITY CONTROL MANAGER (INDUSTRIAL) IS DESIGNATED TO PLAN, COORDINATE AND DIRECT THE QUALITY CONTROL PROGRAM TO ENSURE CONTINUOUS PRODUCTION OF PRODUCTS CONSISTENT WITH ESTABLISHED STANDARDS BY LEADING THE DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF QUALITY CONTROL SYSTEMS AND PROGRAMS TO MEET BUSINESS OBJECTIVES, QUALITY SYSTEMS AND REGULATORY REQUIREMENTS.

A Quality Control Manager (Industrial) will be able to:

1. Develop and implement standards, methods, and procedures for inspecting, testing and evaluating the precision, accuracy, efficacy and reliability of products;
2. Manage timelines and appropriate sense of urgency in all aspects of quality control team functions;
3. Provide guidance to QC employees, work priorities for quality control group and ensure appropriate turnaround times that accurately reflect product release needs;
4. Ensure all materials and products are tested in accordance with written procedures;
5. Provide inspection activity throughout the supply chain, including raw material, in process and finished good;
6. Provide product release for raw material, in-process, final product and stability;
7. Investigate failures in a timely manner to identify possible root causes;
8. Develop corrective/preventative actions to prevent recurrence of failures;
9. Perform audits of the laboratory and document results appropriately;
10. Write and review sops and specifications and methods for use in quality control;
11. Provide support for technology transfers from product development to quality control;
12. Assist product development in formulating new products or in establishing standards for these products prior to initial production; and
13. Provide troubleshooting activities for product and process performance, this includes complaint investigation and non-conformance investigations.

Pre-requisites:

- i. Qualification : Minimum Degree in related fields
- ii. Experience : Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT DIRECTOR (INDUSTRIAL)

QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT DIRECTOR (INDUSTRIAL) IS DESIGNATED TO DIRECT, LEAD AND FOR ALL OPERATIONAL ASPECTS OF THE QUALITY MANAGEMENT DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance / Quality Control / Quality Management Director (Industrial) will be able to:

1. Direct, lead and coordinate company's Quality Assurance, Quality Control and Quality Management plans, systems and activities;
2. Responsible for all product quality issues, including managing internal and external communication on product qualities;
3. Identifies on-going quality issues and makes recommendations to improve current processes;
4. Interfaces with customers, suppliers, engineering and manufacturing groups on quality related issues;
5. Provides training in statistical concepts and techniques;
6. Establish, review & approve quality control methods and procedures;
7. Collaborate with other departments to ensure the establishment of comprehensive quality specifications of current and new products with due compliance to established parameters;
8. Oversee vendor rating to ensure that vendors are sufficiently competent to provide quality products and that are produced under a controlled Quality Control systems; and
9. Advise in development of business systems and processes beyond product and services quality.

Pre-requisites:

- iii. Qualification : Minimum Masters Degree in related fields
- iv. Experience : Minimum 10 years

Annex 8.5.3:

QA/ QC/ QM

(Quality Management)



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

DOCUMENT CONTROLLER (INDUSTRIAL)

A DOCUMENT CONTROLLER (INDUSTRIAL) IS DESIGNATED TO MANAGE DOCUMENTS OF AN ORGANIZATION FOR A PROJECT OR WHOLE ORGANIZATION TO A MUCH HIGHER DEGREE OF RELIABILITY FOR SECURITY, VERSION, VISIBILITY, AVAILABILITY AND, MOST IMPORTANTLY, WITH A CONTROLLED RELIABLE AUDIT TRAIL.

A Document Controller (Industrial) will be able to:

1. Follow the document or numbering policy of the company;
2. Follow the company procedure and a clear understanding of company document moment system;
3. Implement processes and tools, providing system reports;
4. Maintain and update electronic information systems, distributing documents, and ensuring accuracy of all documentation are all essential functions of a document controller;
5. Ensure regulatory procedures and changes are followed is also an essential part of the job junction;
6. Ensure that all corporate documents are well checked and submitted on time prior to the documents submission due date;
7. Perform regular audit on corporate documents in order to ensure that all documents are properly submitted to other departments;
8. Ensures that all documents have no errors in filenames, submissions, etc before submitting it to the nest department to avoid confusion; and
9. Prepare of all documents and communicating with employees in order to make submissions early is part of the job description of a document controller.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in related field
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 6**

QUALITY MANAGEMENT MANAGER (INDUSTRIAL)

A QUALITY MANAGEMENT MANAGER (INDUSTRIAL) IS DESIGNATED TO MONITOR AND ADVISE ON THE PERFORMANCE OF THE QUALITY MANAGEMENT SYSTEM AND PRODUCES DATA AND REPORT ON PERFORMANCE, MEASURING AGAINST SET INDICATORS.

A Quality Management Manager (Industrial) will be able to:

1. Focus not only on product or service quality, but also the means to achieve it;
2. Promote quality achievement and performance improvement throughout the organisation;
3. Maintain awareness of the business context and company profitability, including budgetary control issues;
4. Work with purchasing staff to establish quality requirements from external suppliers;
5. Ensure compliance with national and international standards and legislation;
6. Consider the application of environmental and health and safety standards;
7. Define quality procedures in conjunction with operating staff;
8. Set up and maintain controls and documentation procedures;
9. Supervise technical staff in carrying out tests and checks;
10. Prepare clear explanatory documents such as customers' charters; and
11. Monitor performance by gathering relevant data and producing statistical reports.

Pre-requisite:

- i. Academic Qualification: Possess minimum Degree in related field
- ii. Experience: minimum 5-10 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

**QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT
DIRECTOR (INDUSTRIAL)**

QUALITY ASSURANCE / QUALITY CONTROL / QUALITY MANAGEMENT DIRECTOR (INDUSTRIAL) IS DESIGNATED TO DIRECT, LEAD AND FOR ALL OPERATIONAL ASPECTS OF THE QUALITY MANAGEMENT DEPARTMENTS RELATED TO THE MANAGEMENT, MAINTENANCE AND REVIEW OF THE QUALITY MANAGEMENT SYSTEMS IN ACCORDANCE WITH ALL STANDARD OPERATING PROCEDURES, QUALITY MANAGEMENT PLANS, GOOD MANUFACTURING PRACTICES, COMPANY POLICIES AND PROCEDURES AND LEGAL REQUIREMENTS WHEREVER APPLICABLE.

A Quality Assurance / Quality Control / Quality Management Director (Industrial) will be able to:

1. Direct, lead and coordinate company's Quality Assurance, Quality Control and Quality Management plans, systems and activities;
2. Responsible for all product quality issues, including managing internal and external communication on product qualities;
3. Identifies on-going quality issues and makes recommendations to improve current processes;
4. Interfaces with customers, suppliers, engineering and manufacturing groups on quality related issues;
5. Provides training in statistical concepts and techniques;
6. Establish, review & approve quality control methods and procedures;
7. Collaborate with other departments to ensure the establishment of comprehensive quality specifications of current and new products with due compliance to established parameters;
8. Oversee vendor rating to ensure that vendors are sufficiently competent to provide quality products and that are produced under a controlled Quality Control systems; and
9. Advise in development of business systems and processes beyond product and services quality.

Pre – requisites:

- i. Qualification : Minimum Masters Degree in related field
- ii. Experience : Minimum 10 years

ANNEX 8.6:

HEALTH, SAFETY AND ENVIRONMENT (HSE) DIVISION

Annex 8.6.1:

HSE

(Environment)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

WASTE TREATMENT ASSISTANT (INDUSTRIAL)

A WASTE TREATMENT ASSISTANT (INDUSTRIAL) IS DESIGNATED TO INVOLVE IN OPERATING, MAINTAINING, MONITORING, AND ADJUSTING OR WASTEWATER TREATMENT PLANTS, BOOSTER OR SEWAGE PUMPING STATION EQUIPMENT IN ORDER TO ENSURE COMPLIANCE WITH GOVERNMENT LAWS, REGULATIONS AND POLICIES.

A Waste Treatment Assistant (Industrial) will be able to:

1. Conduct sampling duties in compliance with state and federal regulations;
2. Conduct a variety of process tests;
3. Monitor sludge levels in process tanks;
4. Clean service area equipment such as process floats, tanks, weirs, walls scum collectors, cascades, and distribution boxes;
5. Assist with mechanical preventative and corrective maintenance of process equipment, valves, and structures at treatment plants, and sewage pumping station, and water booster stations;
6. Conduct instrumentation and electrical corrective preventative maintenance;
7. Conduct service area equipment and plant vehicles preventative maintenance;
8. Conduct general housekeeping, buildings and ground maintenance at treatment plants, pump or booster stations; and
9. Perform related duties as required.

Pre-requisites:

- i. Academic qualification: Possess minimum SKM Level 2 in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

WASTE TREATMENT TECHNICIAN (INDUSTRIAL)

A WASTE TREATMENT TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO APPLY THEORY AND PRINCIPLES OF ENVIRONMENTAL ENGINEERING TO MODIFY, TEST, AND OPERATE EQUIPMENT AND DEVICES USED IN THE PREVENTION, CONTROL, AND REMEDIATION OF ENVIRONMENTAL POLLUTION, INCLUDING WASTE TREATMENT AND SITE REMEDIATION. MAY ASSIST IN THE DEVELOPMENT OF ENVIRONMENTAL POLLUTION REMEDIATION DEVICES UNDER DIRECTION OF SUPERIOR.

A Waste Treatment Technician (Industrial) will be able to:

1. Operate equipment used for filtering sludge to separate liquids from solids;
2. Perform routine inspections, start-up and shutdown procedures and emergency operations;
3. Ensure that filter-pressed material is properly prepared for transportation to a landfill or another designated area;
4. Track and record all of the essential production data;
5. Handle and direct the handling of chemicals for the line and for pollution control; and
6. Ensure proper functioning of the wastewater treatment system by maintaining the proper ph levels in process tanks to comply with all environmental regulations.

Pre-requisites:

- i. Academic qualification: Possess minimum Certificate in related field.
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

WASTE TREATMENT SUPERVISOR (INDUSTRIAL)

A WASTE TREATMENT SUPERVISOR (INDUSTRIAL) IS DESIGNATED TO SUPERVISE THE WASTE TREATMENT ACTIVITIES.

A Waste Treatment Supervisor (Industrial) will be able to:

1. Maintain an effective communication with county departments and staff to facilitate and ensure adherence to policies and procedures;
2. Supervise and coordinate activities of a designated unit; determine work procedures, prepare work schedules and determine methods for expediting workflow; assign, review and approve the work of subordinate staff;
3. Oversee the Sludge Management Program in compliance with local, state and federal regulations;
4. Obtain permits, submit tests and reports, attend public meetings and coordinate sludge hauling and contracted acceptance;
5. Prepare and administer annual budget for the laboratory, pre-treatment program, sludge hauling and for contracted sludge utilisation;
6. Establish and implement policies, plans, procedures and standards for the efficient and effective operation and maintenance of the laboratory;
7. Provide planning leadership and direction and develops short and long range plans; develop and prepare data for reports and recommendations;
8. Analyse needs and recommend improvements to the existing laboratory; and
9. Ensure that managers, appropriate personnel and agencies are apprised of laboratory test results, pre-treatment activities and sludge issues by submitting technical reports and updates.

Pre-requisites:

- i. Academic qualification: Possess minimum SKM Level 4 in related field
- ii. Experience: Not necessary



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

ENVIRONMENTAL EXECUTIVE (INDUSTRIAL)

AN ENVIRONMENTAL EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO MONITOR DEVELOPMENTS AND ENSURE COMPANY COMPLIANCES AT ALL TIMES WITH APPLICABLE LEGAL REQUIREMENTS ON ENVIRONMENTAL MATTERS WITH RESPECT TO OSH ACT, FACTORY MACHINERY ACT, AND ENVIRONMENTAL QUALITY ACT AND RELATED ACTS.

An Environmental Executive (Industrial) will be able to:

1. Assist Section/Department Heads maintaining an environmental compliance working condition;
2. Ensure all processing activities adhering to the respective approved environmental compliance operating procedure;
3. Initiate and coordinate all environmental awareness activities and training;
4. Evaluate and approve Environmental Analysis;
5. Prepare and submit all relevant reports to DOE and other relevant environmental related local authorities as required;
6. Manage all waste disposal and waste recycling activities;
7. Maintain records on all waste disposal quantity and quality;
8. Maintain a list of current approved waste disposal contractors;
9. Maintain the waste disposal agreements/contracts; and
10. Conduct Environmental Audits where required.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Environmental or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

ENVIRONMENTAL MANAGER (INDUSTRIAL)

AN ENVIRONMENTAL MANAGER (INDUSTRIAL) IS RESPONSIBLE FOR EXAMINING CORPORATE ACTIVITIES TO ESTABLISH WHERE IMPROVEMENTS CAN BE MADE AND ENSURE COMPLIANCE WITH ENVIRONMENTAL LEGISLATION ACROSS THE ORGANISATION.

An Environmental Manager (Industrial) will be able to:

1. Develop and implement environmental strategies and action plans that ensure corporate sustainable development;
2. Lead on sustainable procurement for all goods and services;
3. Coordinate all aspects of pollution control, waste management, recycling, environmental health, conservation and renewable energy;
4. Lead the implementation of environmental policies and practices;
5. Ensure compliance with environmental legislation;
6. Carry out impact assessments to identify, assess and reduce an organisation's environmental risks and financial costs;
7. Promote and raise awareness at all levels of an organisation, of the impact of emerging environmental issues, whether legislative or best practice, on corporate, ethical and social responsibility;
8. Manage the development and implementation of an environmental management system; and
9. Train staff at all levels in environmental issues and responsibilities.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Environmental or equivalent
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

HEALTH, SAFETY AND ENVIRONMENT DIRECTOR (INDUSTRIAL)

HEALTH, SAFETY AND ENVIRONMENT DIRECTOR (INDUSTRIAL) IS DESIGNATED TO PROVIDE ADVICE, SUPPORT AND GUIDANCE ON ALL MATTERS OF LEGAL COMPLIANCE REGARDING HEALTH AND SAFETY THUS ENSURING THAT THE COMPANY MEETS THE NECESSARY LEGISLATIVE OBLIGATIONS.

A Health, Safety and Environment Director (Industrial) will be able to:

1. Drive the continuous improvement of health and safety management;
2. Facilitate the development of innovative policies and practices;
3. Review policies and prepare comprehensive reports for senior management and the health and safety committee;
4. Review and maintain health and safety related work plans for all projects;
5. Ensure that effective tools, systems, and policies are in place to ensure compliance with both internal expectations and legal requirements;
6. Proactively identify and address health, safety, and security issues/concerns.
7. Recognise safety performance excellence, and address situations where performance fails to meet expectation;
8. Build a strong organisation by developing people and attract top talent to the health, safety and security team;
9. Support the company's global Health and Safety goals as an active member and contributor to the H&S leadership team; and
10. Represent the company through involvement with various boards, commissions, associations and community groups to maintain and develop professional relations and promote community good will.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Science Occupational Health and Safety or equivalent
- ii. Experience: Minimum 10 years

Annex 8.6.2:

HSE

(Health and Safety)



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 3**

HEALTH AND SAFETY TECHNICIAN (INDUSTRIAL)

A HEALTH AND SAFETY TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO ENSURE THAT ITS ACTIVITIES PRESENT A HIGH LEVEL OF PROTECTION FOR THE HEALTH AND SAFETY OF ITS EMPLOYEES, CUSTOMERS, THE PUBLIC AND THE ENVIRONMENT.

A Health and Safety Technician (Industrial) will be able to:

1. Prevent harm to workers, property, the environment, and the general public;
2. Promote occupational health and safety within organisations;
3. Conduct inspections and inform the management of a business which areas may not be in compliance with government policies, in order to gain their support for addressing these areas;
4. Advise management on the cost and effectiveness of safety and health programs;
5. Collect data on work environments for analysis by occupational health and safety specialists;
6. Assist in implementing and evaluating programs designed to limit risks to workers;
7. Identify potential hazards in systems, equipment, products, facilities, or processes planned for use in the future;
8. Conduct training sessions for management, supervisors, and workers on health and safety practices and regulations to promote an understanding of a new or existing process;
9. Examine and test machinery and equipment to ensure the machinery and equipment meet appropriate safety regulations; and
10. Ensure that hazardous materials are stored correctly.

Pre-requisites:

- i. Academic qualification: Possess minimum Certificate in Occupational Health and Safety or equivalent.
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

HEALTH AND SAFETY OFFICER (INDUSTRIAL)

A HEALTH AND SAFETY OFFICER (INDUSTRIAL) IS DESIGNATED TO PERFORM A VARIETY OF ROUTINE AND COMPLEX ADMINISTRATIVE, TECHNICAL, AND PROFESSIONAL WORK IN ANALYSING AND ADMINISTERING VARIOUS COMPONENTS OF THE ENVIRONMENTAL, HEALTH AND SAFETY PROGRAMS.

A Health and Safety Officer (Industrial) will be able to:

1. Design and recommend effective OH&S system that establishes authority and accountability for safety at the department level;
2. Lead process of developing and recommending OH&S policy and standards or changes to existing standards and the enforcement of them;
3. Consult with department safety personnel in the implementation of safety programs, analysis, problem solving, and corrective action plans;
4. Evaluate accident statistics and define target goals for performance and monitor for achievement of goals; recommend long-range accident prevention and cost-control objectives designed to meet established goals;
5. Develop and implement processes, methods and tools designed to measure, evaluate, and monitor departmental safety performance;
6. Oversee the design, preparation, analysis and distribution of safety data and statistical reports concerning accidents, trends and solutions to work related problems to all departments and executive management;
7. Develop and oversee contracts with consultants for services provided to the Company.
8. Develop and initiate new programs and services related to OH&S strategic long-range plans;
9. Oversee review and approval process for department Accident Prevention Plans; and
10. Develop and implement a sound OH&S document and record management system.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma in Science Occupational Health and Safety or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

HEALTH AND SAFETY EXECUTIVE (INDUSTRIAL)

A HEALTH AND SAFETY EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO MONITOR DEVELOPMENTS AND ENSURE COMPANY COMPLIANCES AT ALL TIMES WITH APPLICABLE LEGAL REQUIREMENTS ON HEALTH AND SAFETY MATTERS WITH RESPECT TO OSH ACT, FACTORY MACHINERY ACT, AND ENVIRONMENTAL QUALITY ACT AND RELATED ACTS.

A Health and Safety Executive (Industrial) will be able to:

1. Assist Section/Department Heads maintaining a healthy and safe working environment;
2. Ensure all processing activities adhering to the respective approved health and safe operating procedure;
3. Initiate and coordinate all health and safety awareness activities and training;
4. Evaluate and approve Occupational Health and Safety Analysis;
5. Maintain and update Material Safety Data Sheets (MSDS) or Chemical Safety Data Sheets (CSDS), both in English and Bahasa Malaysia;
6. Ensure MSDS/CSDS availability and easily accessibility to all users at the places where the chemicals are used or stored;
7. Conduct HSE Inspection at regular basis together with the appointed members of the HSE Committee;
8. Update and maintain Re-Act Summary and Accident/Incident Summary on monthly basis;
9. Maintain a register of all Lost Time Injuries (LTIs) and near misses/unsafe acts, and report to Head-Office;
10. Ensure Personal Protective Equipment (PPE), safety kits, machine safety guards (and safety control devices) and safety protection equipments (e.g. fire-protection system) are available in good condition; and
11. Ensure external contractors and vendors carrying out works are inducted and made aware of the health and safety requirements and that all safe working conditions are observed and complied with the work permits requirements (when issued).

Pre-requisites:

- i. Academic qualification: Possess minimum Science Degree in Occupational Health and Safety or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

OCCUPATIONAL HEALTH AND SAFETY MANAGER (INDUSTRIAL)

AN OCCUPATIONAL HEALTH AND SAFETY MANAGER (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE FOR DEVELOPING AND IMPLEMENTING PROGRAMS AND POLICIES THAT ENSURE THE OVERALL SAFETY AND HEALTH OF EMPLOYEES AND THAT ENABLES COMPLIANT BUSINESS OPERATIONS.

An Occupational Health and Safety Manager (Industrial) will be able to:

1. Plan, organise and conduct Monthly Supervisor Safety meetings for three shifts at three separate locations;
2. Inspect organisation facilities to detect existing or potential hazards and recommend corrective or preventative measures;
3. Oversee workers compensation claims management;
4. Develop and maintain Health and Safety programs and policies as required;
5. Conduct root cause analysis of industrial accidents and illnesses and develop actions plans to eliminate hazards;
6. Provide leadership, strategic planning and subject matter expertise that ensures appropriate EH&S systems and resources are in place;
7. Create Health & Safety Plan to ensure conformance with regulatory and company requirements; and
8. Promote knowledge transfer through regional teams, best practices and training.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Science Occupational Health and Safety or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

HEALTH, SAFETY AND ENVIRONMENT DIRECTOR (INDUSTRIAL)

HEALTH, SAFETY AND ENVIRONMENT DIRECTOR (INDUSTRIAL) IS DESIGNATED TO PROVIDE ADVICE, SUPPORT AND GUIDANCE ON ALL MATTERS OF LEGAL COMPLIANCE REGARDING HEALTH AND SAFETY THUS ENSURING THAT THE COMPANY MEETS THE NECESSARY LEGISLATIVE OBLIGATIONS.

A Health, Safety and Environment Director (Industrial) will be able to:

1. Drive the continuous improvement of health and safety management;
2. Facilitate the development of innovative policies and practices;
3. Review policies and prepare comprehensive reports for senior management and the health and safety committee;
4. Review and maintain health and safety related work plans for all projects;
5. Ensure that effective tools, systems, and policies are in place to ensure compliance with both internal expectations and legal requirements;
6. Proactively identify and address health, safety, and security issues / concerns.
7. Recognise safety performance excellence, and address situations where performance fails to meet expectation;
8. Build a strong organisation by developing people and attracting top talent to the health, safety and security team;
9. Support the company's global Health and Safety goals as an active member of and contributor to the H&S leadership team; and
10. Represent the company through involvement with various boards, commissions, associations and community groups to maintain and develop professional relations and promote community good will.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Science Occupational Health and Safety or equivalent
- ii. Experience: Minimum 10 years

ANNEX 8.7:

REGULATORY AFFAIRS DIVISION

Annex 8.7.1:

Regulatory Affairs
(Compliance)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

COMPLIANCE ASSISTANT EXECUTIVE (INDUSTRIAL)

A COMPLIANCE ASSISTANT EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO SUPPORT THE COMPLIANCE EXECUTIVE AND COMPLIANCE DEPARTMENT IN OVERSEEING THE COMPLIANCE FUNCTION OF THE COMPANY, INCLUDING MONITORING THE COMPANY'S PRACTICES TO ENSURE CONSISTENCY WITH THE BUSINESS RULES, GUIDELINES AND REGULATIONS.

An Compliance Assistant Executive (Industrial) will be able to:

1. Assist in establishing a compliance program, reporting, investigation and recommendation of remedial action;
2. Provide compliance advice and ensure enforcement of all compliance programmes;
3. Assist in reviewing filings with regulators, regular compliance returns and internal investigations;
4. Match the company's compliance effort including staff training, liaison with external auditors and the relevant authorities; and
5. Check new products to confirm compliance with applicable regulations.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma in Law/Corporate Secretarial/Accountancy qualifications or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

COMPLIANCE EXECUTIVE (INDUSTRIAL)

A COMPLIANCE EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO SUPPORT COMPLIANCE DEPARTMENT IN OVERSEEING THE COMPLIANCE FUNCTION OF THE COMPANY, INCLUDING MONITORING THE COMPANY'S PRACTICES TO ENSURE CONSISTENCY WITH THE BUSINESS RULES, GUIDELINES AND REGULATIONS.

A Compliance Executive (Industrial) will be able to:

1. Establish a compliance program, reporting, investigation and recommendation of remedial action;
2. Provide compliance advice and ensure enforcement of all compliance programmes;
3. Review filings with regulators, regular compliance returns and internal investigations;
4. Match the company's compliance effort including staff training, liaison with external auditors and the relevant authorities;
5. Supervise, support, and resolve issues with department professional and support staff; and
6. Assure department staff adhere to policies, procedures, deadlines, and other regulatory requirements of the company.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Law/Corporate Secretarial/Accountancy qualifications or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

REGULATORY AFFAIRS MANAGER (INDUSTRIAL)

A REGULATORY AFFAIRS MANAGER (INDUSTRIAL) IS DESIGNATED TO MANAGE REGULATORY AFFAIRS TEAM AND REGULATORY AFFAIRS RELATED ACTIVITIES TO KEEP TRACK OF THE EVER-CHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Manager (Industrial) will be able to:

1. Attend to Regulatory enquiry, audit and submission of documents;
2. Responsible to manage the departmental operations for regulatory compliance of the company's products and licenses;
3. Keep abreast with local country and overseas legislation and guidelines;
4. Review company's practices and advising on regulatory requirements;
5. Oversee preparation and/or review regulatory documentation including verifying finished artwork (ie labels, package inserts, unit boxes);
6. Ensure smooth process of product registrations and licenses;
7. Liaise closely, build and maintain rapport with the regulatory authorities;
8. Manage and maintain Patents/Intellectual Property validity for all registered Patents; and
9. Work closely with R&D, Production, QA, QC, Marketing Department for projects such as new product development and launching.

Pre-requisites:

- i. Academic qualification: Possess minimum Science Degree in related field or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

REGULATORY AFFAIRS DIRECTOR (INDUSTRIAL)

A REGULATORY AFFAIRS DIRECTOR (INDUSTRIAL) IS DESIGNATED TO DIRECTS REGULATORY OPERATIONS GROUP WHICH IS RESPONSIBLE FOR SUBMISSION OF ALL REGULATORY COMMUNICATIONS IN ACCORDANCE WITH APPLICABLE GOVERNMENTAL REGULATIONS AND GUIDANCES.

A Regulatory Affairs Director (Industrial) will be able to:

1. Conduct reviews of submissions for completeness, scientific accuracy and ease of review;
2. Provide regulatory guidance Regulatory and Compliance team;
3. Direct preparation and review of annual reports and supplements for marketed products;
4. Manage and develop staff in group to provide career growth;
5. Monitor and assess impact of regulations, guidance, current regulatory environment and competitive labelling;
6. Provide regulatory guidance to functional areas to ensure understanding and compliance with appropriate regulations and guidelines; and
7. Oversee Company Regulatory function.

Pre-requisites:

- i. Academic qualification: Possess minimum Science Degree in related field or equivalent
- ii. Experience: Minimum 7 years

Annex 8.7.2:

Regulatory Affairs
(Regulatory)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

REGULATORY AFFAIRS ASSISTANT EXECUTIVE (INDUSTRIAL)

A REGULATORY AFFAIRS ASSISTANT EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO ASSIST REGULATORY AFFAIRS TEAM TO KEEP TRACK OF THE EVER-CHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Assistant Executive (Industrial) will be able to:

1. Provide assistance to the Regulatory Affairs team with regulatory affairs relating to products;
2. Check sources for updated regulations, new consultative documents and other HSE information/issues relevant to the company;
3. Assist with the establishing and modification of procedures in the Responsible Care and quality areas;
4. Ensure company comply with all of the regulations and laws pertaining to their business;
5. Advise company on the regulatory aspects and climate that would affect proposed activities; and
6. Provide regulatory support to product in various stages of development.

Pre-requisites:

- i. Academic qualification: Possess minimum Science Diploma in related field or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

REGULATORY AFFAIRS EXECUTIVE (INDUSTRIAL)

A REGULATORY AFFAIRS EXECUTIVE (INDUSTRIAL) IS DESIGNATED TO INVOLVE IN REGULATORY AFFAIRS TEAM TO KEEP TRACK OF THE EVERCHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Executive (Industrial) will be able to:

1. Provide assistance to the Regulatory Affairs team with regulatory affairs relating to products;
2. Check sources for updated regulations, new consultative documents and other HSE information/issues relevant to the company;
3. Assist with the establishing and modification of procedures in the Responsible Care and quality areas;
4. Ensure company comply with all of the regulations and laws pertaining to their business;
5. Advise company on the regulatory aspects and climate that would affect proposed activities; and
6. Provide regulatory support to product in various stages of development.

Pre-requisites:

- i. Academic qualification: Possess minimum Science Degree in related field or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

REGULATORY AFFAIRS MANAGER (INDUSTRIAL)

A REGULATORY AFFAIRS MANAGER (INDUSTRIAL) IS DESIGNATED TO MANAGE REGULATORY AFFAIRS TEAM AND REGULATORY AFFAIRS RELATED ACTIVITIES TO KEEP TRACK OF THE EVER-CHANGING LEGISLATION IN ALL THE REGIONS IN WHICH THE COMPANY WISHES TO DISTRIBUTE ITS PRODUCTS. THEY ALSO ADVISE ON THE LEGAL AND SCIENTIFIC RESTRAINTS AND REQUIREMENTS, AND COLLECT, COLLATE, AND EVALUATE THE SCIENTIFIC DATA THAT THEIR RESEARCH AND DEVELOPMENT COLLEAGUES ARE GENERATING.

A Regulatory Affairs Manager (Industrial) will be able to:

1. Attend to Regulatory enquiry, audit and submission of documents;
2. Responsible to manage the departmental operations for regulatory compliance of the company's products and licenses;
3. Keep abreast with local country and overseas legislation and guidelines;
4. Review company practices and advising on regulatory requirements;
5. Oversee preparation and/or review regulatory documentation including verifying finished artwork (ie labels, package inserts, unit boxes);
6. Ensure smooth process of product registrations and licenses;
7. Liaise closely, build and maintain rapport with the regulatory authorities;
8. Manage and maintain Patents/Intellectual Property validity for all registered Patents; and
9. Work closely with R&D, Production, QA, QC, Marketing Department for projects such as new product development and launching.

Pre-requisites:

- i. Academic qualification: Possess minimum Science Degree in related field or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

REGULATORY AFFAIRS DIRECTOR (INDUSTRIAL)

A REGULATORY AFFAIRS DIRECTOR (INDUSTRIAL) IS DESIGNATED TO DIRECTS REGULATORY OPERATIONS GROUP WHICH IS RESPONSIBLE FOR SUBMISSION OF ALL REGULATORY COMMUNICATIONS IN ACCORDANCE WITH APPLICABLE GOVERNMENTAL REGULATIONS AND GUIDANCES.

A Regulatory Affairs Director (Industrial) will be able to:

1. Conduct reviews of submissions for completeness, scientific accuracy and ease of review;
2. Provide regulatory guidance Regulatory and Compliance team;
3. Direct preparation and review of annual reports and supplements for marketed products;
4. Manage and develop staff in group to provide career growth;
5. Monitor and assess impact of regulations, guidance, current regulatory environment and competitive labeling;
6. Provide regulatory guidance to functional areas to ensure understanding and compliance with appropriate regulations and guidelines; and
7. Oversee Company Regulatory function.

Pre-requisites:

- i. Academic qualification: Possess minimum Science Degree in related field or equivalent
- ii. Experience: Minimum 7 years

ANNEX 8.8:

ENGINEERING DIVISION

Annex 8.8.1:

Engineering
(Maintenance)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

ENGINEERING ASSISTANT TECHNICIAN (INDUSTRIAL)

AN ENGINEERING ASSISTANT TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO ROUTINE TECHNICAL OFFICE AND FIELD ENGINEERING FUNCTIONS IN CONNECTION WITH ASSIGNED PROJECT ACTIVITIES AND PERFORMS OTHER DUTIES ASSIGNED.

An Engineering Assistant Technician (Industrial) will be able to:

1. Update various computer databases relating to work using office software;
2. Assist contractors and the public in interpreting and complying with construction requirements;
3. Use drafting techniques and procedures to prepare routine engineering designs;
4. Develop graphs, charts, and exhibits for presentation;
5. Assist in the performance of research and in developing project design and cost estimates for the assigned project;
6. Assist in field inspections of projects, developments, and other improvements; and
7. Inspect and maintain daily written records of progress made in construction and materials used.

Pre-requisites:

- i. Academic qualification: Possess minimum SKM Level 2 in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

ENGINEERING TECHNICIAN (INDUSTRIAL)

AN ENGINEERING TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO ASSIST IN TECHNICAL TASKS, CONTRIBUTORY TO DESIGN, DEVELOPMENT, MANUFACTURE, CONSTRUCTION, INSTALLATION, MAINTENANCE AND REPAIR OF MECHANICALLY FUNCTIONING PLANT AND EQUIPMENT AND REPAIR OF ELECTRICAL SYSTEMS AND EQUIPMENT.

An Engineering Technician (Industrial) will be able to:

1. Assist in research and development works concerning machine tools, engines, heating and ventilating, refrigerating installations, mechanically functioning plant and equipment, electrical systems, equipment and facilities and testing prototypes;
2. Design and prepare layouts of machines, mechanical installations, electrical installations and circuitry;
3. Prepare detailed estimates of quantities and costs of materials and labour required for manufacture and installation;
4. Assist with technical supervision of manufacture, utilisation, maintenance and repair of mechanical plant and engines and repair of electrical systems and equipment;
5. Apply technical knowledge of machinery and mechanical engineering principles and apply technical knowledge of electrical engineering theory and practice in order to identify and solve problems arising in the course of their work; and
6. Assist in the development and monitoring the implementation of safety standards and procedures.

Pre-requisites:

- i. Academic qualification: Possess minimum Certificate in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT TECHNOLOGIST (INDUSTRIAL)

AN ASSISTANT TECHNOLOGIST (INDUSTRIAL) IS DESIGNED TO PERFORMS A VARIETY OF PROFESSIONAL FIELD AND OFFICE ENGINEERING WORK IN CONNECTION WITH THE DESIGN, DEVELOPMENT, SPECIAL PROJECTS, TRANSPORTATION AND CONSTRUCTION SECTIONS OF THE ENGINEERING DIVISION AND OTHER RELATED ENGINEERING PROJECTS.

An Assistant Technologist (Industrial) will be able to:

1. Check construction plans for accuracy and conformance with requirements;
2. Confer with contractors, engineers to resolve complaints;
3. Assist and work with other sections within the engineering division on specific assigned tasks;
4. Recommend engineering requirements within established procedures and standards;
5. Conduct preliminary studies of engineering projects including making calculations,
6. Prepare budgets and project schedule, gather supporting data, and analyse alternatives;
7. Conduct utility master plan studies and fee updates; and
8. Update pavement management system.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma in engineering or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

MAINTENANCE TECHNOLOGIST (INDUSTRIAL)

A MAINTENANCE TECHNOLOGIST (INDUSTRIAL) IS DESIGNATED TO APPLY ENGINEERING CONCEPTS TO THE OPTIMISATION OF EQUIPMENT, PROCEDURES, AND DEPARTMENTAL BUDGETS TO ACHIEVE BETTER MAINTAINABILITY, RELIABILITY, AND AVAILABILITY OF EQUIPMENT.

A Maintenance Technologist (Industrial) will be able to:

1. Analyse repetitive equipment failures;
2. Prepare estimation of maintenance costs and evaluation of alternatives;
3. Forecast of equipment spare parts;
4. Assess the needs for equipment replacements and establish replacement programs when due;
5. Apply project management and scheduling principles to replacement programs;
6. Assess required maintenance tools and skills required for efficient maintenance of equipment;
7. Write maintenance strategies to help with installation and commissioning guidelines;
8. Assess required skills required for maintenance personnel;
9. Review personnel transfers to and from maintenance organisations; and
10. Assess and report safety hazards associated with maintenance of equipment.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Engineering (Electrical/Electronic/ Mechanical/Mechatronic /Electromechanical) or equivalent
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

MAINTENANCE MANAGER (INDUSTRIAL)

A MAINTENANCE MANAGER (INDUSTRIAL) IS DESIGNATED TO ENSURE THAT COMPANY'S FACILITIES AND EQUIPMENTS ARE EFFECTIVELY MAINTAINED TO MAXIMISE PERFORMANCE OF PRODUCTION EQUIPMENT EFFICIENTLY AND REGULARLY, PREVENT BREAKDOWN OR FAILURES, MINIMISE PRODUCTION LOSS FROM FAILURES AND INCREASE RELIABILITY OF THE OPERATING SYSTEMS.

A Maintenance Manager (Industrial) will be able to:

1. Design, implement, and modify preventive maintenance programs by reviewing production, quality control, and maintenance reports and statistics;
2. Supervise facilities maintenance department personnel; Direct and supervise contract maintenance services for landscaping, roofing, janitorial, forklift, and pest control services;
3. Maintain maintenance staff job results by coaching, counseling, and disciplining employees; plans, monitors and appraises job results; Complete maintenance operational requirements by scheduling and assigning employees; follows up on work results;
4. Schedule and prioritise maintenance, preventive maintenance and repairs activities of the facility, structures, equipment and events. Insure timely completion of work;
5. Identify current and future maintenance requirements by establishing rapport with management, engineering, and production personnel, tradesmen, technicians, and other persons in a position to understand maintenance requirements;
6. Direct maintenance operations by initiating, coordinating, and enforcing program, operational, and personnel policies and procedures;
7. Provide and maintain heat, cool, electric power, gas, compressed air, water, and dust collection by directing installation of, modifications to, and maintenance activities on utility systems; and
8. Facilitate employee training.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Engineering or equivalent
- ii. Experience: Minimum 5 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 7**

ENGINEERING AND MAINTENANCE DIRECTOR (INDUSTRIAL)

AN ENGINEERING AND MAINTENANCE DIRECTOR (INDUSTRIAL) IS DESIGNATED TO ORGANISE AND OVERSEE REPAIR CREWS TO ENSURE JOBS ARE PERFORMED SAFELY AND EFFICIENTLY. IN ORDER TO PROVIDE THE BEST POSSIBLE SERVICES, A DIRECTOR NEEDS TO HAVE AN EXPERT KNOWLEDGE OF MANY ASPECTS REGARDING CONSTRUCTION AND REPAIR.

An Engineering and Maintenance Director (Industrial) will be able to:

1. Develop and set the engineering, maintenance and facilities strategy and communicate this effectively;
2. Lead team to provide advice, policy, specifications and provision of engineering, maintenance and facilities services to enable company's facilities operate effectively;
3. Work with property buying and corporate purchasing to source the best value, lowest cost to deliver engineering and maintenance solutions which are better, simpler and cheaper;
4. Forecast trends in engineering developments and seek opportunities to maintain competitive advantage;
5. Manage cost centre expenditure to be within budgets and maximise return from the development programme budget by exercising effective use and control;
6. Identify and implement opportunities to make cost savings and achieve year on year reduction in revenue and capital expenditure;
7. Set clear direction to ensure team is clear on their accountabilities and deliverables; and
8. Develop, motivate and manage team to build capability and future talents.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Engineering, Building, Construction or related field
- ii. Experience: Minimum 10 years

Annex 8.8.2:

Engineering
(Project Engineering)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

ENGINEERING ASSISTANT TECHNICIAN (INDUSTRIAL)

AN ENGINEERING ASSISTANT TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO ROUTINE TECHNICAL OFFICE AND FIELD ENGINEERING FUNCTIONS IN CONNECTION WITH ASSIGNED PROJECT ACTIVITIES AND PERFORMS OTHER DUTIES ASSIGNED.

An Engineering Assistant Technician (Industrial) will be able to:

1. Update various computer databases relating to work using office software;
2. Assist contractors and the public in interpreting and complying with construction requirements;
3. Use drafting techniques and procedures to prepare routine engineering designs;
4. Develop graphs, charts, and exhibits for presentation;
5. Assist in the performance of research and in developing project design and cost estimates for the assigned project;
6. Assist in field inspections of projects, developments, and other improvements; and
7. Inspect and maintain daily written records of progress made in construction and materials used.

Pre-requisites:

- i. Academic qualification: Possess minimum SKM Level 2 in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

ENGINEERING TECHNICIAN (INDUSTRIAL)

AN ENGINEERING TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO ASSIST IN TECHNICAL TASKS, CONTRIBUTORY TO DESIGN, DEVELOPMENT, MANUFACTURE, CONSTRUCTION, INSTALLATION, MAINTENANCE AND REPAIR OF MECHANICALLY FUNCTIONING PLANT AND EQUIPMENT AND REPAIR OF ELECTRICAL SYSTEMS AND EQUIPMENT.

An Engineering Technician (Industrial) will be able to:

1. Assist in research and development works concerning machine tools, engines, heating and ventilating, refrigerating installations, mechanically functioning plant and equipment, electrical systems, equipment and facilities and testing prototypes;
2. Design and prepare layouts of machines, mechanical installations, electrical installations and circuitry;
3. Prepare detailed estimates of quantities and costs of materials and labour required for manufacture and installation;
4. Assist with technical supervision of manufacture, utilisation, maintenance and repair of mechanical plant and engines and repair of electrical systems and equipment;
5. Apply technical knowledge of machinery and mechanical engineering principles and apply technical knowledge of electrical engineering theory and practice in order to identify and solve problems arising in the course of their work; and
6. Assist in the development and monitor the implementation of safety standards and procedures.

Pre-requisites:

- i. Academic qualification: Possess minimum Certificate in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT TECHNOLOGIST (INDUSTRIAL)

AN ASSISTANT TECHNOLOGIST (INDUSTRIAL) IS DESIGNATED TO PERFORM A VARIETY OF PROFESSIONAL FIELD AND OFFICE ENGINEERING WORK IN CONNECTION WITH THE DESIGN, DEVELOPMENT, SPECIAL PROJECTS, TRANSPORTATION AND CONSTRUCTION SECTIONS OF THE ENGINEERING DIVISION AND OTHER RELATED ENGINEERING PROJECTS.

An Assistant Technologist (Industrial) will be able to:

1. Check construction plans for accuracy and conformance with requirements;
2. Confer with contractors, engineers to resolve complaints;
3. Assist and work with other sections within the engineering division on specific assigned tasks;
4. Recommend engineering requirements within established procedures and standards;
5. Conduct preliminary studies of engineering projects including making calculations;
6. Prepare budgets and project schedule, gather supporting data, and analyse alternatives;
7. Conduct utility master plan studies and fee updates; and
8. Update pavement management system.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma in engineering or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

MECHANICAL TECHNOLOGIST (INDUSTRIAL)

MECHANICAL ENGINEERS (INDUSTRIAL) CONDUCT RESEARCH AND ADVISE ON DESIGN AND DIRECT PRODUCTION OF MACHINES, MACHINERY AND INDUSTRIAL PLANT, EQUIPMENT AND SYSTEMS, AND ADVISE ON AND DIRECT THEIR FUNCTIONING, MAINTENANCE AND REPAIRS, OR STUDY AND ADVISE ON TECHNOLOGICAL ASPECTS OF PARTICULAR MATERIALS, PRODUCTS OR PROCESSES.

A Mechanical Technologist (Industrial) will be able to:

1. Advise in designing machinery and tools for manufacturing, mining, construction, agricultural work and other industrial purposes;
2. Advise in designing steam, internal combustion and other non-electric motors and engines used for driving industrial or other machinery;
3. Advise in designing power plant, heating and ventilation systems, steering gear, pumps and other mechanical equipment;
4. Advise in designing road vehicle bodies, suspension systems, brakes and other components;
5. Advise in designing heating, ventilation and refrigeration systems and equipment;
6. Advise in designing mechanical plant and equipment;
7. Advise in designing non-electrical parts of apparatus or products such as word processors, computers, precision instruments, cameras and projectors; and
8. Establish control standards and procedures to ensure efficient functioning and safety of machines, machinery, tools, motors, engines, and industrial plant, equipment or systems.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Mechanical Engineering or equivalent
- ii. Experience: Minimum 3 years



**BIOTECHNOLOGY BASED INDUSTRY
LEVEL 5**

PROJECT TECHNOLOGIST (INDUSTRIAL)

A PROJECT TECHNOLOGIST (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE IN COORDINATING ALL TECHNICAL ACTIVITIES ON ASSIGNED PROJECTS.

A Project Technologist (Industrial) will be able to:

1. Head project meetings to collect and disseminate information pertaining to projects;
2. Coordinate the collection and dissemination of technical information between/within the company and customer;
3. Schedule and monitor program activity to achieve an “on-time” result including follow-up with external suppliers to ensure timely response to action items;
4. Monitor program cost activity to achieve an “in budget” result;
5. Prepare quotations utilising supplier information, cost standards, technical information from quality, manufacturing engineering, design;
6. Create bill of material, detailed instructions for manufacturing process of new part, specification for packaging, external supplier specification to provide standard cost structure and instructions for manufacturing;
7. Evaluate project performance of functional areas;
8. Select and recommends procedures or development of methods;
9. Prepare designs, drawings, plans and specifications for projects, engineered systems, technical equipment or components;
10. Supervise technical testing, survey or field engineering teams;
11. Assist in client contact and communication pertaining to specific projects; and
12. Review and monitor project progress to assure quality and adherence to requirements of contract documents.

Pre-requisites:

- i. Academic qualification: Possess minimum Bachelor of Science Degree in Engineering
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

PROJECT ENGINEERING MANAGER (INDUSTRIAL)

A PROJECT ENGINEERING MANAGER (INDUSTRIAL) IS DESIGNATED TO BE RESPONSIBLE IN PLANNING, ORGANISING, AND MANAGING RESOURCES TO BRING ABOUT THE SUCCESSFUL COMPLETION OF SPECIFIC PROJECT GOALS AND OBJECTIVES.

A Project Engineering Manager (Industrial) will be able to:

1. Create and execute project work plans and revises as appropriate to meet changing needs and requirements;
2. Identify resources needed and assign individual responsibilities;
3. Manage day-to-day operational aspects of a project and scope;
4. Review deliverables prepared by team before passing to client;
5. Prepare for engagement reviews and quality assurance procedures;
6. Minimise exposure and risk on project; and
7. Ensure project documents are complete, current, and stored appropriately.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Engineering or equivalent
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

ENGINEERING AND MAINTENANCE DIRECTOR (INDUSTRIAL)

AN ENGINEERING AND MAINTENANCE DIRECTOR (INDUSTRIAL) IS DESIGNATED TO ORGANISE AND OVERSEE REPAIR CREWS TO ENSURE JOBS ARE PERFORMED SAFELY AND EFFICIENTLY. IN ORDER TO PROVIDE THE BEST POSSIBLE SERVICES, A DIRECTOR NEEDS TO HAVE EXPERT KNOWLEDGE OF MANY ASPECTS OF CONSTRUCTION AND REPAIR.

An Engineering and Maintenance Director (Industrial) will be able to:

1. Develop and set the engineering, maintenance and facilities strategy and communicate this effectively;
2. Lead team to provide advice, policy, specifications and provision of engineering, maintenance and facilities services to enable company's facilities operate effectively;
3. Work with property buying and corporate purchasing to source the best value, lowest cost to deliver engineering and maintenance solutions which are better, simpler and cheaper;
4. Forecast trends in engineering developments and seek opportunities to maintain competitive advantage;
5. Manage cost centre expenditure to be within budgets and maximise return from the development programme budget by exercising effective use and control;
6. Identify and implement opportunities to make cost savings and achieve year on year reduction in revenue and capital expenditure;
7. Set clear direction to ensure team is clear on their accountabilities and deliverables; and
8. Develop, motivate and manage team to build capability and future talents.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Engineering, Building, Construction or related field
- ii. Experience: Minimum 10 years

Annex 8.8.3:

Engineering
(Electrical and
Instrumentation)



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 2

ENGINEERING ASSISTANT TECHNICIAN (INDUSTRIAL)

ENGINEERING ASSISTANT TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO ROUTINE TECHNICAL OFFICE AND FIELD ENGINEERING FUNCTIONS IN CONNECTION WITH ASSIGNED PROJECT ACTIVITIES AND PERFORMS OTHER DUTIES ASSIGNED.

An Assistant Engineering Technician (Industrial) will be able to:

1. Update various computer databases relating to work using office software;
2. Assist contractors and the public in interpreting and complying with construction requirements;
3. Use drafting techniques and procedures to prepare routine engineering designs;
4. Develop graphs, charts, and exhibits for presentation;
5. Assist in the performance of research and in developing project design and cost estimates for the assigned project;
6. Assist in field inspections of projects, developments, and other improvements; and
7. Inspect and maintain daily written records of progress made in construction and materials used.

Pre-requisites:

- i. Academic qualification: Possess minimum Certificate in related field
- ii. Experience: Not necessary



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 3

ENGINEERING TECHNICIAN (INDUSTRIAL)

ENGINEERING TECHNICIAN (INDUSTRIAL) IS DESIGNATED TO ASSIST IN TECHNICAL TASKS, CONTRIBUTORY TO DESIGN, DEVELOPMENT, MANUFACTURE, CONSTRUCTION, INSTALLATION, MAINTENANCE AND REPAIR OF MECHANICALLY FUNCTIONING PLANT AND EQUIPMENT AND REPAIR OF ELECTRICAL SYSTEMS AND EQUIPMENT.

An Engineering Technician (Industrial) will be able to:

1. Assist in research and development works concerning machine tools, engines, heating and ventilating, refrigerating installations, mechanically functioning plant and equipment, electrical systems, equipment and facilities and testing prototypes;
2. Design and prepare layouts of machines, mechanical installations, electrical installations and circuitry;
3. Prepare detailed estimates of quantities and costs of materials and labour required for manufacture and installation;
4. Assist with technical supervision of manufacture, utilisation, maintenance and repair of mechanical plant and engines and repair of electrical systems and equipment;
5. Apply technical knowledge of machinery and mechanical engineering principles and applying technical knowledge of electrical engineering theory and practice in order to identify and solve problems arising in the course of their work; and
6. Assist in the development and monitoring the implementation of safety standards and procedures.

Pre-requisites:

- i. Academic qualification: Possess minimum Certificate in related field
- ii. Experience: minimum 1 year



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT TECHNOLOGIST (INDUSTRIAL)

AN ASSISTANT TECHNOLOGIST (INDUSTRIAL) IS DESIGNED TO PERFORMS A VARIETY OF PROFESSIONAL FIELD AND OFFICE ENGINEERING WORK IN CONNECTION WITH THE DESIGN, DEVELOPMENT, SPECIAL PROJECTS, TRANSPORTATION AND CONSTRUCTION SECTIONS OF THE ENGINEERING DIVISION AND OTHER RELATED ENGINEERING PROJECTS.

An Assistant Technologist (Industrial) will be able to:

1. Check construction plans for accuracy and conformance with requirements;
2. Confer with contractors, engineers to resolve complaints;
3. Assist and work with other sections within the engineering division on specific assigned tasks;
4. Recommend engineering requirements within established procedures and standards;
5. Conduct preliminary studies of engineering projects including making calculations,
6. Prepare budgets and project schedule, gather supporting data, and analysing alternatives;
7. Conduct utility master plan studies and fee updates; and
8. Update pavement management system.

Pre-requisites:

- i. Academic qualification: Possess minimum Diploma in engineering or equivalent
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

INSTRUMENTATION TECHNOLOGIST (INDUSTRIAL)

AN INSTRUMENTATION TECHNOLOGIST (INDUSTRIAL) IS DESIGNED TO DESIGN, DEVELOP, ADAPT, TEST AND MAINTAIN ELECTRONIC COMPONENTS, CIRCUITS AND SYSTEMS USED FOR COMPUTER SYSTEMS, COMMUNICATIONS SYSTEMS AND INDUSTRIAL APPLICATIONS.

An Instrumentation Technologist (Industrial) will be able to:

1. Advise in designing electronic devices, circuits and systems used for computers, communications and control systems and other industrial applications;
2. Design software especially embedded software to be used within such systems;
3. Develop apparatus and procedures to test electronic components, circuits and systems;
4. Supervise installation and commissioning of computer and telecommunications systems and ensuring proper control and protection methods;
5. Establish control standards and procedures to ensure efficient functioning and safety of electronic systems, motors and equipment;
6. Locate and correct malfunctions;
7. Organize and direct maintenance and repair of existing electronic systems, motors and equipment;
8. Study and advise on technological aspects of particular materials, products or processes;
9. Maintain technical liaison and consultancy with other relevant specialists;
10. Performing related tasks; and
11. Supervising other workers.

Pre-requisites:

- i. Academic Qualification: Possess minimum Degree in Electrical/ Electronic Engineering or equivalent.
- ii. Experience: Minimum 3 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

ELECTRICAL & INSTRUMENTATION MANAGER (INDUSTRIAL)

AN ELECTRICAL & INSTRUMENTATION MANAGER (INDUSTRIAL) IS DESIGNED TO OVERSEE A TEAM OF MAINTENANCE PROFESSIONALS WHO COORDINATE AND CARRY OUT ALL TASKS RELATED TO THE REPAIR AND IMPROVEMENT OF THE ELECTRICAL SYSTEMS AND INSTRUMENTATION, ELECTRONIC COMPONENTS, CIRCUITS AND SYSTEMS USED FOR COMPUTER SYSTEMS, COMMUNICATIONS SYSTEMS AND INDUSTRIAL APPLICATIONS.

An Electrical & Instrumentation Manager (Industrial) will be able to:

1. Oversee a team of electrical and instrumentation service professionals, scheduling them for work, assign tasks and review their performance;
2. Negotiate all service contract agreements with external vendors;
3. Keep detailed records of all pending and completed work orders, maintaining these files in an organisationally implemented record-keeping system;
4. Be responsible for preparing and maintaining his department's budget, tracking all expenses as they occur; and
5. Ensure the team under his/ her supervision performs all of their duties in compliance with any laws that regulate the field.

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Electrical/ Electronic Engineering or equivalent.
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

ENGINEERING & MAINTENANCE DIRECTOR (INDUSTRIAL)

AN ENGINEERING & MAINTENANCE DIRECTOR (INDUSTRIAL) IS DESIGNATED TO ORGANIZE AND OVERSEES REPAIR CREWS TO ENSURE JOBS ARE PERFORMED SAFELY AND EFFICIENTLY. IN ORDER TO PROVIDE THE BEST POSSIBLE SERVICES, A DIRECTOR NEEDS TO HAVE EXPERT KNOWLEDGE OF MANY ASPECTS OF CONSTRUCTION AND REPAIR.

An Engineering & Maintenance Director (Industrial) will be able to:

1. Develop and set the engineering, maintenance and facilities strategy and communicate this effectively;
2. Lead team to provide advice, policy, specifications and provision of engineering, maintenance and facilities services to enable company's facilities operate effectively;
3. Work with property buying and corporate purchasing to source the best value, lowest cost to deliver engineering and maintenance solutions which are better, simpler and cheaper;
4. Forecast trends in engineering developments and seek opportunities to maintain competitive advantage;
5. Manage cost centre expenditure to be within budgets and maximise return from the development programme budget by exercising effective use and control;
6. Identify and implement opportunities to make cost savings and achieve year on year reduction in revenue and capital expenditure;
7. Set clear direction to ensure team is clear on their accountabilities and deliverables; and
8. Develop, motivate and manage team to build capability and future talents;

Pre-requisites:

- i. Academic qualification: Possess minimum Degree in Engineering, Building, Construction or related field
- ii. Experience: Minimum 10 years

ANNEX 8.9:

BIOINFORMATICS

Annex 8.9.1:

Bioinformatics



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 4

ASSISTANT BIOINFORMATICIAN (INDUSTRIAL)

AN ASSISTANT BIOINFORMATICIAN (INDUSTRIAL) IS DESIGNATED TO PRIMARILY ASSIST ACTIVITIES PERTAINING TO DESIGN AND DEVELOPMENT OF BIOINFORMATICS SOFTWARE FOR IDENTIFIED BIOTECHNOLOGY SECTOR.

An Assistant Bioinformatician (Industrial) will be able to:

1. Assist in designing bioinformatics software development;
2. Assist in the installation and testing of the software;
3. Maintain functionality of the hardware & peripherals and software;
4. Assist in documentation of bioinformatics data;
5. Assist report preparation;
6. Keep and update records and procedures;

Pre-requisite:

- i. Academic qualification: Diploma in IT/Computer Science and Biotechnology or related field
- ii. Experience: Minimum 1 year



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 5

BIOINFORMATICIAN (INDUSTRIAL)

A BIOINFORMATICIAN (INDUSTRIAL) IS DESIGNATED TO PRIMARILY CARRY-OUT ACTIVITIES PERTAINING TO DESIGN AND DEVELOPMENT OF BIOINFORMATICS SOFTWARE FOR BIOTECHNOLOGY SECTOR.DEALS WITH THE MATHEMATICAL MODELING AS WELL AS BIOINFORMATICS SOFTWARE DEVELOPMENT BASED ON SEMANTIC ENVIRONMENT.

A Bioinformatician (Industrial) will be able to:

1. Carry out development on the new bioinformatics software, databases and data analysis, and computer systems;
2. Manage existing bioinformatics software development, databases and data analysis, and computer systems;
3. Carry out data collection and data analysis;
4. Make the necessary report and recommendations from the analysed data;
5. Maintain and ensure the software conforms to requirements;
6. Implement review and update standard operating procedures;
7. Develop quality scientific software including writing new code and optimizing existing code and algorithms for high performance computing environment;
8. Handle bioinformatics tool development, biological data and system analysis;
9. Handle analytical bioinformatics software design and development; and
10. Execute Formulation and Designing Mathematical Model based on Drug Development.

Pre-requisite:

- i. Academic qualification: Degree in IT/Computer Science and Biotechnology or related fields
- ii. Experience: Minimum 2 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 6

BIOINFORMATICS MANAGER (INDUSTRIAL)

A BIOINFORMATICS MANAGER (INDUSTRIAL) IS DESIGNATED TO PRIMARILY MANAGE, ORGANIZE AND ADMINISTER ACTIVITIES PERTAINING TO DEVELOPMENT PLAN, SYSTEM ANALYSIS, DATABASES AND ANALYSIS, SOFTWARE AND HARDWARE DEVELOPMENT, USER SUPPORT, INSTALLATION AND MAINTENANCE OF OPERATING SYSTEM AND MAINTAIN NETWORKING WITH OTHER ENTITIES.

A Bioinformatics Manager (Industrial) will be able to:

1. Manage existing bioinformatics software development, databases and data analysis, and computer systems;
2. Plan and propose additional bioinformatics software development, databases and data analysis, and computer system;
3. Execute, coordinate and evaluate client's needs;
4. Carry out evaluation on the overall operation;
5. Manage human resource including recruitment, training, performance appraisal and staff development;
6. Supervise the implementation, review and update data and network security system;
7. Ensure systems conformance to standard and specifications; and
8. Responsible for department procurement and inventory.

Pre-requisite:

- i. Academic qualification: Possess minimum Degree in IT/Computer Science and Biotechnology or related fields
- ii. Experience: Minimum 5 years



BIOTECHNOLOGY BASED INDUSTRY

LEVEL 7

BIOINFORMATICS DIRECTOR (INDUSTRIAL)

A BIOINFORMATICS DIRECTOR (INDUSTRIAL) IS RESPONSIBLE TO CREATION AND ADVANCEMENT OF DATABASES, ALGORITHMS, COMPUTATIONAL AND STATISTICAL TECHNIQUES AND THEORY TO SOLVE FORMAL AND PRACTICAL PROBLEMS ARISING FROM THE MANAGEMENT AND ANALYSIS OF BIOLOGICAL DATA.

A Bioinformatics Director (Industrial) will be able to:

1. Map and analyze DNA and protein sequences, aligning different DNA and protein sequences to compare them and creating and viewing 3-D models of protein structures;
2. Provide requirements towards anticipated technological changes that will impact computational and storage requirements as well as require additional support resources or reassignment of existing resources;
3. Responsible for building programs by using computational formulas to determine outcomes based on biological projects or research;
4. Create query routines and building relational databases; and
5. Review database system to ensure it always in line with current technology.

Pre-requisite:

- i. Academic qualification: Possess minimum Masters Degree in IT/Computer Science and Biotechnology or related fields
- ii. Experience: Minimum 10 years

Department of Skills Development
Level 7 & 8, Block D4, Complex D,
Federal Government Administrative Centre,
62530, Wilayah Persekutuan Putrajaya
Tel : 603-8886 5000
Fax : 603-8889 2423
Email : jpk@mohr.gov.my

Department Of Skills Development

Blok 4803, Suite 0-10,
Bangunan CDB Perdana
Persiaran Flora, 63000 Cyberjaya
Selangor Darul Ehsan.
Tel : 03-8321 4700
Fax : 03-8321 4888

**Department of Skills Development
Central Region**

Ministry of Human Resources,
A305-7 & A301-2, West Tower,
Wisma Consplant 2,
No. 2, Jalan SS 16/4,
47500 Subang Jaya, Selangor Darul Ehsan.
Tel : 03-56359995
Fax : 03-56388777 / 03-56381113
Email : jpkcentral@mohr.gov.my

**Jabatan Pembangunan Kemahiran
Wilayah Selatan**

Kementerian Sumber Manusia,
Aras 18, Menara KWSP, Jalan Dato' Dalam
80000 Johor Bahru, Johor
Tel : 07-2226503
Fax : 07-2226607
Email : jpkselatan@mohr.gov.my

**Jabatan Pembangunan Kemahiran
Wilayah Sarawak,**

Kementerian Sumber Manusia
No.11-01 & 11-02, Level 11
Gateway Kuching, Jalan Bukit Mata
93100 Kuching, Sarawak
Tel : 082-420257/70/73
Fax : 082-420278
Email : jpkswk@mohr.gov.my

**Jabatan Pembangunan Kemahiran
Wilayah Utara**

Kementerian Sumber Manusia
Lot MZ.03 & MZ.04, Tingkat Mezzanin
Bangunan KWSP, No. 3009,
Off Lebuah Tenggiri 2,
Bandar Seberang Jaya,
13700 Seberang Jaya, Pulau Pinang.
Tel : 04-3809400/1/2
Faks : 04-3809413
Email : jpkutara@mohr.gov.my

**Jabatan Pembangunan Kemahiran
Wilayah Timur,**

Kementerian Sumber Manusia
Tingkat 6, Wisma MAIDAM
Jalan Banggol
20100 Kuala Terengganu,
Terengganu Darul Iman.
Tel : +609-6265500
Fax : +09-6265502 /
09-6265503
Email : jpktimur@mohr.gov.my

**Jabatan Pembangunan Kemahiran
Wilayah Sabah**

Kementerian Sumber Manusia
Lot A6.2 & A6.3, Tingkat 6
Blok A, Bangunan KWSP,
Jalan Karamunsing,
88598 Kota Kinabalu, Sabah
Tel : 088-270420/413
Fax : 088-270424
Email : jpksbh@mohr.gov.my

**Pusat Latihan Pengajar dan
Kemahiran Lanjutan(CIAST)**
Peti Surat 7012, Jalan Petani 19/1
Seksyen 19, 40900 Shah Alam, Selangor
Tel : 03-5543 8200
www.ciastr.gov.my

ISBN 978-967-5876-27-1



9 789675 876271