



**CORE COMPETENCIES REFERENCE MANUALS FOR
PHARMACY TECHNOLOGISTS TO WORK IN ZAMBIA**

CORE COMPETENCIES AND MINIMUM STANDARDS

Contents

1.0 INTRODUCTION	3
2.0 Exit Examinations and Award of the Diploma in Pharmacy Technology by Training Institutions	3
3.0 Licensure Examinations by the Health Professions Council of Zambia.....	3
4.0 COMPETENCE OUTCOME GUIDELINES	4
5.0 OVERALL DIPLOMA IN PHARMACY TECHNOLOGY CURRICULUM OUTCOMES.....	5
KNOWLEDGE DOMAIN.....	6
SKILLS DOMAIN	8
PROFESSIONAL ATTITUDES	11
6.0 COMPETENCE WEIGHTING	12
7.0 REFERENCE MATERIALS	13

1.0 INTRODUCTION

The Health Professions Council of Zambia (HPCZ) is a statutory body that was established by the Health Professions Act No. 24 of 2009. The Act renames and continues the existence of the Medical Council of Zambia established by the Medical and Allied Professions Act of 1977. The Health Professions Act No. 24 provides for the registration of health practitioners and regulation of their professional conduct; provides for the licensing of health facilities and the accreditation of health care services provided by health facilities; and provides for the recognition and approval of training programmes for health practitioners.

Following the issuance of guidelines for the introduction of licensure examinations (LEX) for health professionals registrable with HPCZ, this bulletin provides an outline of the minimum competency standards for registrants who have successfully completed the Diploma in Pharmacy Technology (Dip Pharm) or the equivalent seeking provisional or temporal registration to practice as a Pharmacy Technologist in Zambia.

2.0 Exit Examinations and Award of the Diploma in Pharmacy Technology by Training Institutions

Training institutions, private or public, approved by the Health Professions Council of Zambia are mandated to examine and graduate their students under their own seal and authority. The Diploma in Pharmacy Technology or equivalent award is designated the primary qualification of the Pharmacy Technologist and it is a pre-requisite requirement for eligibility for licensure examinations. Accordingly, a holder of the Diploma in Pharmacy Technology or equivalent will be required to take and pass the HPCZ licensure examination to qualify for registration with the Council as a Pharmacy Technologist on **Provisional** or **Temporal** registration.

3.0 Licensure Examinations by the Health Professions Council of Zambia

A person shall not practise as a health practitioner, unless that person is registered as a health practitioner in accordance with the Health Professions Act No. 24 of 2009. In the exercise of its functions under this Act, the 2nd Council and the 3rd Council of the HPCZ instituted the LEX to help maintain standards given the emergence of multiple private and public training institutions. This “Minimum Competence Standards for LEX for Pharmacy Technologist to Work in Zambia” binds all parties regulated under this Act. Examination fees for licensure

examinations, as prescribed by the Council, are payable to the HPCZ as part of the eligibility to sit for licensing examinations.

The HPCZ Licensing Examination assesses a Diploma in Pharmacy Technology graduate's ability to apply scientific knowledge, skills and professional attitudes that are important in the practice of pharmacy and that constitute the basis of safe and effective pharmacy practice for the patients and society. The HPCZ Licensing Examination includes, but is not limited to, theoretical and practical examinations which complement each and the other components. No component is a stand-alone in the assessment of readiness for pharmacy practice in Zambia.

The candidate will be assessed under three domains, namely:-

- Knowledge,
- Skills
- Attitude.

The above domains will be assessed by means of a theory exam comprising of multiple choice questions followed by a composite Objective Structured Practical Examination (OSPE).

The main **subject areas** (assessed under all three learning domains) for Pharmacy Technologist in Zambia are:

1. Pharmaceutics
2. Pharmaceutical Chemistry
3. General Pharmacology
4. General Pharmacy practice and Law
5. Basic Pharmaceutical Research processes

4.0 COMPETENCE OUTCOME GUIDELINES

The process of licensure seeks to detect the candidate's attainment in each educational domain (knowledge, skills and attitude) and evaluates the minimum competence standards as benchmarks for licensure to practice the profession. It also guides prospective candidate's learning and assessment by examiners. HPCZ, on behalf of the general public and professional stakeholders, expects holders of the Diploma in Pharmacy Technology to meet the minimum competence standards outlined in this document.

5.0 OVERALL DIPLOMA IN PHARMACY TECHNOLOGY CURRICULUM OUTCOMES

At the successful completion of the programme, a graduate with a Diploma in Pharmacy Technology or equivalent should be able to demonstrate the following competences:

1. Manages the manufacturing of pharmaceutical products under supervision
2. Demonstrates knowledge in the management and treatment of minor ailments
3. Demonstrates knowledge in the management of pharmaceutical and medical devices supply chain
4. Prepares medicines prescribed and dispenses to the patients under supervision.
5. Practices rational use of all medicines.
6. Provides basic information and education on medicines and drugs.
7. Demonstrates leadership, communication and management skills and promotes public health
8. Participates in pharmaceutical and integrated health research
9. Exhibits professional and ethical conduct and demonstrates life-long learning skills.

KNOWLEDGE DOMAIN

Competency/ Outcome	Competency Statement	Specific Competencies
1. Provide information and education on drugs and medicines including toxicity issues	The candidate should be able to apply basic biomedical sciences and General Pharmacology to the practice of pharmacy	<ol style="list-style-type: none"> 1. Describes normal human structure and function 2. Describes the structure, functions and diseases of all body systems 3. Describes the protective mechanisms against common infectious diseases and their management 4. Explains the classification, structure and growth of microbial organisms 5. Explains infectious diseases and their means of spread 6. Outlines sterilization principles, methods and their application in pharmacy 7. Relates disinfection principles and methods to pharmacy practice 8. Explains aseptic techniques 9. Explains microbiological stability of drug dosage forms 10. Explains drugs acting on all human body systems and chemotherapeutic agents 11. Explains blood, blood products and antidotes 12. Explains the treatment trends in malignancy disease conditions 13. Manages opportunistic infections in immunocompromised patients
2. Participates in the Manufacture, compound and manage the manufacturing/compounding of pharmaceutical products	The candidate should be able to apply Pharmaceutics and pharmaceutical chemistry related sciences to the practice of pharmacy	<ol style="list-style-type: none"> 1. Distinguishes pharmaceutical formulations 2. Describes pharmaceutical unit processes 3. Explains the labelling and packaging requirements for pharmaceutical formulations. 4. Describes the technology of pharmaceutical formulations 5. Explains the stability of pharmaceutical formulations 6. Explains technology of industrial pharmaceutical processes 7. Explains sterile products and good manufacturing practice 8. Optimizes pharmaceutical formulation needs of a patient in practice. 9. Explains the concepts of general and physical chemistry 10. Describes inorganic compounds of pharmaceutical interest and their chemical properties 11. Explains drug stability and factors that influence drug stability 12. Explains the concepts of organic chemistry and functional group chemistry

		<ul style="list-style-type: none"> 13. Explains the concept of stereochemistry, polarimetric analysis, r-s and e-z nomenclature 14. Describes the principles of spectrometric methods 15. Describes instrumental methods of analysis 16. Explains the natural sources of drugs
<ul style="list-style-type: none"> 3. Participates in the Management of the dispensing process, pharmacy business, the pharmaceutical supply chain and provide professional guidance/service in different settings of pharmacy practice 	<p>The candidate should be able to apply general pharmacy practice principles to the practice of pharmacy</p>	<ul style="list-style-type: none"> 1. Describes the health team and the Zambian Health System. 2. Explains the basic elements of effective communication in the practice of pharmacy. 3. Demonstrates the fundamental principles of dispensing medicines and related substances as a professional process. 4. Explains the fundamental concepts of professional ethics and their application to pharmacy practice. 5. Explains the fundamental principles of pharmaceutical supply chain management. 6. Explains the concepts and principles of standards of practice and good professional practices in various settings of pharmacy practice 7. Applies communication skills 8. Applies community health services 9. Explains national drug policy 10. Explains basics in preventing communicable diseases 11. Applies basics in conducting community health promotion 12. Interprets the local drug legislation relating to the practice of pharmacy 13. Discusses related international drug legislation 14. Describes their roles and responsibilities in setting Agro veterinary pharmacy 15. Applies weighing and measuring techniques 16. Describes the concept of rational drug use
<ul style="list-style-type: none"> 4. Participates in pharmaceutical and integrated health research 	<p>The candidate should be able to demonstrate basic pharmaceutical Research principles to the practice of pharmacy</p>	<ul style="list-style-type: none"> 1. Applies basic biostatistics principles 2. Applies basic project/research principles

SKILLS DOMAIN

Competency/ Outcome	Competency Statement	Specific Competencies
<p>1. Participates in the design of active pharmaceutical ingredients</p>	<p>The candidate should be able to perform and demonstrate skills in relation to pharmaceutical chemistry</p>	<ol style="list-style-type: none"> 1. Carries out identification tests of compounds <ul style="list-style-type: none"> - Description, colour, odour, texture - Solubility - Identify reactions for common ions - Flame colour tests 2. Performs melting and boiling point determinations 3. Determines pH measurements 4. Performs basic organic and inorganic identification test-quantitative analysis <ul style="list-style-type: none"> - Physical properties - Identification tests - Analysis 5. Performs out purity tests <ul style="list-style-type: none"> - British pharmacopoeia limit test - Alkalinity/acidity test 6. Conducts calorimetric and spectroscopic analysis <ul style="list-style-type: none"> - Calorimetry - Spectrometry 7. Carries out analysis of drug dosage forms <ul style="list-style-type: none"> - Mixtures - Tablets and capsules - Injections and intravenous fluids - Suppositories, pessaries, ointment, creams 8. Performs separation methods <ul style="list-style-type: none"> - Extraction - Chromatography 9. Carries out gravimetric analysis

<p>2. Manufacture, compound and manage the manufacturing/compounding of pharmaceutical products</p>	<p>The Pharmacy Technology LEX candidate should be able to integrate basic biomedical and scientific principles into performance and demonstration of skills related to pharmaceutical practice.</p>	<ol style="list-style-type: none"> 1. Performs unit processes in industrial practice 2. Prepares pharmaceutical formulations <ul style="list-style-type: none"> - Liquid formulations - Non-sterile drug formulations - Solid formulations 3. Implements drug management systems 4. Uses sterilization methods <ul style="list-style-type: none"> - Moist heat - Dry heat - Filtration 5. Demonstrates the concept of optimization of the intended therapeutic outcomes of medicines <ul style="list-style-type: none"> - Identify drug design for appropriate conditions - Identify dosage design for appropriate use - Appropriate and comprehensive labeling.
<p>3. Participates in the Management of the dispensing process, pharmacy business, the pharmaceutical supply chain and provide professional guidance/service in different settings of pharmacy practice</p>	<p>The candidate should be able to apply general pharmacy practice to the practice of pharmacy</p>	<ol style="list-style-type: none"> 1. Performs industrial pharmacy <ul style="list-style-type: none"> - Formulators - Packaging and labelling - Quality assurance and quality control - Marketing - Import and export - Storage and stock control - Safety 2. Practices hospital pharmacy <ul style="list-style-type: none"> - Dispensing - Drug procurement and supply chain management - Ward pharmacy - Providing drug information - Client counselling - Monitor, supervise and evaluate drug use 3. Practices community pharmacy <ul style="list-style-type: none"> - Responding to symptoms

		<ul style="list-style-type: none">- Dispensing- Drug procurement- Providing drug information- Client counselling- Monitor, supervise and evaluate drug use <p>4. Performs basic first aid</p> <p>5. Demonstrates the concept of patient-drug compliance</p> <ul style="list-style-type: none">- Patient factors- Drug factors- Work-related factors- Social/community related factors
--	--	--

PROFESSIONAL ATTITUDES

Competency/ Outcome	Competency Statement	Specific Competencies
1. Communication Skills	The candidate should be able to effectively communicate with patients, clients, and other health workers whilst applying the knowledge and skills to the practice of pharmacy	<ol style="list-style-type: none"> 1. Communicates effectively with health and social care staff, support staff, patients, carer, family relatives and clients/customers, using lay terms and checking understanding. 2. Demonstrates cultural awareness, sensitivity and Tailor communication to patient needs. 3. Uses appropriate communication skills to build, report and engage with patients, health and social care staff and voluntary services (e.g. verbal and non-verbal)
2. Professionalism	The candidate must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, law & sensitivity to a diverse patient population	<ol style="list-style-type: none"> 1. Demonstrates ethically sound practice 2. Practices informed decision making 3. Respects patients privacy in handling matters 4. Practices confidentiality with patient information 5. Demonstrates adherence to code of practice <p>Demonstrates sensitivity to diverse patient groups</p>
3. Laboratory Safety	The candidate must be able to practice laboratory safety skills in pharmacy practice	<ol style="list-style-type: none"> 1. Demonstrates laboratory safety in: <ul style="list-style-type: none"> - Laboratory safety - Good laboratory practice - Use of balances - Use of glassware - Care of equipment

6.0 COMPETENCE WEIGHTING

COMPETENCE	WEIGHTING (%)
1. Participate in the design of active pharmaceutical ingredients	20
2. Participates in the Manufacture, compound and manage the manufacturing/compounding of pharmaceutical products	20
3. Provides information and education on drugs and medicines (human and veterinary)	20
4. Provide pharmaceutical information as well as diagnose and treat minor ailments in an ethical manner	15
5. Participates in the management of the dispensing process, pharmacy business, the pharmaceutical supply chain and provide professional guidance/service in different settings of practice in an ethical manner	20
6. Participate in pharmaceutical and integrated health research in an ethical manner	5
TOTAL	100

7.0 REFERENCE MATERIALS

Competency	Competency Description and Subject Areas	Reference Materials And Resources
Competency 1: Knowledge Domain	1. The LEX candidate should be able to demonstrate basic knowledge in Anatomy, Physiology, Biochemistry, General Pathology and Pharmacology	2. Baret KE, Barman SM, Boitano S, Brooks H. (2012). 24 th Edition. Ganong's Review of Medical Physiology. Mc Graw Hill Medical. 978-0071780032.
	2. The candidate should be able to apply basic Pharmaceutics and Pharmaceutical Chemistry sciences to the practice of pharmacy	3. Tortora, G.J and Grabowski, S.R (2011). Principles of Anatomy and Physiology, 13 th edition. John Wiley and Sons, Inc, New York. ISBN 13: 9780470565100
	3. The candidate should be able to apply basic knowledge in professional practice of pharmacy and dispensing practices	4. Harrington C.S. (2014). 15th Edition. Muir's Textbook of Pathology. Taylor and Francis Group. ISBN: 9781444184976.
	4. The candidate should be able to apply basic Scientific Method and Approaches to Medical Research	5. Denyer S.P., Hodges N.A. (2004). Hugo & Russell's Pharmaceutical Microbiology. 7 th edition. Blackwell Science. ISBN: 0632064676
Competency 2: Skills Domain	5. The candidate should be able to perform and demonstrate skills in relation to Pharmaceutics	6. Rang HP, Dale M.M. Ritter J.M. Moore P.K. (2012). 7 th Edition. Pharmacology. Churchill Livingstone. UK. ISBN 978-0-7020-3471-8.
	6. The candidate should be able to perform and demonstrate skills in relation to professional practice of pharmacy and dispensing	7. Winfield AJ, Richards RME (2004) 2 nd Edition. Pharmaceutical Practice, Churchill Livingstone Press. ISBN: 9780443072062
	7. The candidate should be able to perform and demonstrate skills in relation to pharmaceutical chemistry	8. Caims D. (2008). 3rd Edition. Essentials of Pharmaceutical Chemistry. Pharmaceutical Press. ISBN 978 0 85369 745 9
Competency 3: Professional Attitudes	8. The candidate should be able to perform and demonstrate professional attitudes in relation to practice of pharmacy	9. Silverstein RM, Bassler GC, Morrill TC 7TH Edition. 2005. Spectrometric Identification of Organic Compounds, 5th Ed., 1998, John Wiley and Sons Inc. ISBN-13: 978-0471393627
		10. Whalley B, Fletcher, K, Weston, S, Howard, R (2008). 1 st edition. Foundation in pharmacy practice. Pharmaceutical Press. ISBN 9780853697473.4.
		11. Winfield A.J, Rees, J.A, Smith, I (2009). 4 th edition. Pharmaceutical practice. Churchill-Livingstone. ISBN 9780443069062
		12. Desselle, S, Zgarrick, D, and Alston, G (2012). 3 rd Edition. Pharmacy management: Essentials for all practice settings. McGraw Hill. Medical Publishing Division. ISBN 9780071774314.
		13. Purtilo, R.B and Dohert, R (2010). 5 th edition. Ethical Dimensions in the Health Professions. Elseiver. ISBN 9781437708967
		14. Mamot, J et al (2006). Pharmaceutic compounding and dispensing. ISBN

Domain		<p>9780853695752</p> <p>15. The medicines and Allies Substances Act 2013; Dangerous Drugs Act, Narcotic Drugs and Psychotropic Substances Act, Health Professions Act; Food and Drugs Act; Nurses and Midwives Act</p> <p>16. Wayne W. Daniel (2010) ninth edition. Biostatistics, Basic concepts and methodology for the Health sciences. ISBN: 978-0-470-41333-3.</p> <p>17. Kenneth J. Rothman (2012) second edition. Epidemiology an introduction. ISBN:978-0-19-975455-7.</p>
---------------	--	--