



**CORE COMPETENCIES REFERENCE MANUAL FOR DENTAL TECHNOLOGISTS TO
PRACTISE IN ZAMBIA.**

CORE COMPETENCIES & MINIMUM STANDARDS.

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QUALIFICATION AND RESPONSIBILITIES

Title of the Programme: Diploma in Dental Technology (Dip DT)

Key Accountability for the Job: Construction of Dental Prostheses in a health facility.

Primary Roles and Responsibilities:

1. Construct dental prostheses in Dental Laboratory.
2. Manage dental laboratories in health facilities.
3. Order dental technology supplies from stores.

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 the guidelines for introduction of licensing examinations for health professionals to be registered with the Health Professions Council of Zambia, this bulletin provides an outline of the minimum competency standards for registrants who have successfully completed the Diploma in Dental Technology (Dip DT) seeking provisional or temporal registration to practice as a Dental Technologist in Zambia.

2.0 EXIT EXAMINATIONS AND AWARD OF THE DIPLOMA CLINICAL SCIENCES-GENERAL BY TRAINING INSTITUTIONS

Training institutions, private or public (local and foreign) 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 Dental Technology award is designated the primary qualification of the Dental Technologist and it is a pre-requisite requirement for eligibility for licensure examinations. Accordingly, a holder of the Diploma in Dental Technology award will be required to take and pass the HPCZ licensure examination to qualify for registration with the Council as a Dental Technologist.

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 Health Professions Council of Zambia instituted Licensure Examinations to help maintain standards given the emergence of multiple private and public training institutions. This "Bulletin provides information on the core competencies and Minimum Standards for the Licensing Examinations for Dental Technologists 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 Health Professions Council of Zambia as a pre-requisite to sit for licensing examinations.

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

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

1. Knowledge

2. Skills
3. Attitude

The above domains will be assessed by means of a theory exam comprising of multiple choice questions and a practical examination..

The four main **subject areas** (assessed under all three learning domains) for Dental Technologists in Zambia are:

1. Science of Dental Materials.
2. Complete Dentures.
3. Partial Dentures.
4. Orthodontics.

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 Dental Technology to meet the minimum competency standards outlined in this document. The expectations are largely in three main competence areas as follows:

Overall Competences

1) Scientific Knowledge

1. Demonstrate Understanding of Oral Anatomy of the Mouth.
2. Demonstrate Understanding Tooth Morphology of all Teeth in the Mouth
3. Demonstrate Understanding of the Science of Dental Materials..
4. Demonstrate the Principles of Setting a Removable Complete Denture.
5. Demonstrate Understanding of the Principles of Setting a Removable Partial Denture..
6. Demonstrate Understanding of Orthodontics. .
7. Demonstrate Understanding of Crown & Bridge Work. .
8. Apply basic principles of prevention of oral diseases

2) Skills and Performance

1. Demonstrate managerial, administrative and information technology skills
2. Able to Repair a Broken Removable Partial or Full Denture.
3. Cast the impression correctly
4. Interpret the design of removable or fixed prescription from the dentist correctly..
5. Able to Construct special trays correctly
6. Able to Construct Crowns & Bridge correctly

7. Construct partial and complete dentures in acrylic resin correctly., .
Implement health and safety dental laboratory standards
Implement infection prevention measures
8. Provide first aid in emergency cases according to national first aid guidelines.
9. Perform routine service and maintenance of dental laboratory equipment and instruments according to the manufacturer's manual.

3) Attitudes, Values and Professionalism

1. Practices professionally and ethically at all times
2. Uphold and respect of patient's autonomy, dignity and confidentiality.
3. Work with colleagues in ways that best serve the patient's interests.
4. Work with honesty, integrity and fairness.
5. Demonstrate politeness, kindness and empathy to the patients
6. Promotes oral health and disease prevention in communities

5.0 CORE COMPETENCIES: DENTAL TECHNOLOGISTS

DOMAIN	COMPETENCY	COMPETENCY STATEMENT	SUBCOMPETENCIES
KNOWLEDGE			<ul style="list-style-type: none"> i. Explain the Properties and Manipulation of Different Materials Used in Dental Technology. ii. iii. Construct the different Basic Oral Prostheses According to the Required Standards..
	Understanding Of Current Biological, Physical, Cultural, Social And Psychological Factors Which Influence The Attainment And Maintenance Of Oral Health	Demonstrate knowledge and understanding of the legal and ethical responsibilities and legislative requirements relating to safe and competent practice of oral health therapy in Zambia.	<ul style="list-style-type: none"> i) Demonstrate an understanding of biological, physical, cultural, social and psychological factors in oral health therapy ii) Apply this knowledge in the development and delivery of oral health care for individuals and communities. iii) Apply knowledge of these factors to inform best practice. iv) Communicate this knowledge to patients, care-givers, and the wider community.
	Understanding of the Legal Requirements of Practicing in	Demonstrate knowledge and understanding of the legal and	<ul style="list-style-type: none"> i) Demonstrate familiarity with and compliance to relevant legislation and Dental Profession standards

	an Oral Health Workplace	ethical responsibilities and legislative requirements relating to safe and competent practice of oral health therapy in Zambia.	of practice.
	Assess the Effectiveness of Oral Health Strategies	assess the effectiveness of oral health strategies.	<ul style="list-style-type: none"> i) Demonstrate understanding of the prognosis for treatment strategies offered to individual patients and to the community at large ii) Communicate this knowledge to colleagues and professional stakeholders in general iii) Review and assess outcomes of care
	Understand Scientific Enquiry and Methodology	to undertake research and/or analyse relevant scientific literature and apply findings to the delivery of appropriate oral health care.	<ul style="list-style-type: none"> I. Read and critically analyse scientific publications in oral health II. Share experiences and case studies of oral health therapy practice with colleagues III. Demonstrate understanding of current issues including recent developments in oral health; evidential base of practice; new materials and treatment techniques based on research IV. Use scientific knowledge and practice experience to inform oral health practice
SKILLS	Utilise Dental Technology and Techniques	Perform technology skills in provision of oral health. Mix water and plaster correctly	<ul style="list-style-type: none"> i. Describe the role of dental technology in dentistry ii. Identify dental laboratory equipment and instruments iii. Differentiate the dental laboratory equipment and instruments iv. Explain the functions of the

			<p>dental laboratory equipment and instruments</p> <p>v. Describe care and storage of dental laboratory equipment and instruments</p> <p>vi. Mix water and plaster correctly</p> <p>vii. Cast the impression correctly</p> <p>viii. Trim models correctly</p> <p>ix. Duplicate models correctly</p> <p>x. Construct bite registration blocks correctly</p> <p>xi. Articulate the models correctly</p> <p>xii. Demonstrate manual dexterity in carving</p> <p>xiii. Fabricate teeth correctly</p> <p>xiv. Demonstrate manual dexterity in manipulating special tray materials</p> <p>xv. Demonstrate skill in bending orthodontic wires</p>
	Communication and Interpersonal Skills	Communicate effectively with patients, other oral health professionals and the public on oral health matters.	<p>i) Perform basic managerial, administrative and information technology skills</p> <p>ii) Function harmoniously in a multi-disciplinary healthcare team set up.</p> <p>iii) Communicate:</p> <p>a) With Patients:</p> <ul style="list-style-type: none"> - Establish rapport and empathy - Assure patient's dignity - Listen to patients and respect/consider their

			<p>preferences and concerns</p> <ul style="list-style-type: none"> - Explain findings, treatment options and likely outcomes in easily understood language to ensure informed consent - Recognise barriers to communication and meet patient's individual communication needs - Confirm patient's understanding of the information provided. <p>b) With other Healthcare Professionals:</p> <ul style="list-style-type: none"> - Provide medical and dental information in spoken and written form clearly, honestly, factually and without exaggeration. - Communicate openly in inter- and intra-professional teams - Provide written information and copies of records when making a referral, or providing information, to another health professionals involved in patient care <p>c) With the Public:</p> <ul style="list-style-type: none"> - Provide oral health information when called upon - Provide counselling sessions to patients and the public on oral health matters. - Express a professional view on topical public issues related to oral health.
	Fabricate Teeth in the Laboratory	Technologically manage oral health conditions and perform appropriate case management strategies to provide curative services to the patient.	

	Utilize Technology to Manage Information	Utilize basic information communication technology (ICT) to manage patient's information.	<ul style="list-style-type: none"> i) Operate basic ICT platforms such as Email, Internet and computer software such as MS Word, Excel, PowerPoint, etc relevant to manage information. ii) Use information and educational technology to support oral health research, education and patient care.
	Provide Leadership and Management	Demonstrate ability to provide leadership and management in the field of practice or various practice settings.	<ul style="list-style-type: none"> i) Perform leadership and management roles and responsibilities assigned. ii) Manage health system resources
	Provide Patient Care	provide patient care in public and private healthcare settings.	<ul style="list-style-type: none"> i) Obtain and evaluate essential patient information to identify oral health problems ii) Formulate an evidence based oral health care plan that addresses the aetiology of dental and oral disease, the attainment or maintenance of oral health, priority of management, patient options, anticipated outcomes and the duration of treatment iii) Develop and execute patient management plans. iv) Counsel and educate patients/clients and their families. v) Perform dental procedures considered essential in the area of practice competently. vi) Work within the multidisciplinary team of health professionals to provide patient-centred care effectively.

ATTITUDES	Professionalism and Ethical Practice	Demonstration professionalism, ethical practice and conduct.	<ul style="list-style-type: none"> i) Behave according to ethical and legal frameworks governing the practice of dental technologists.. ii) Demonstrate awareness of local, regional and international ethical codes that guide the practice of dental technologists . iii) Value and appreciate the roles and responsibilities of dental technologists in healthcare. iv) Be polite, considerate, trustworthy and honest, and act with integrity, maintain confidentiality, respect patients’ dignity and privacy and understand the role of informed consent. v) Demonstrate caring and respectful behaviour when interacting with patients and their families. vi) Respect all colleagues and others irrespective of age, gender, socio-economic status, political affiliation, race, religion or creed. vii) Do no harm to patients either by intention or negligence in the course of duty. viii) Protect patient’s rights ix) Improve care by prioritizing health and safety of patients.
	Promote the Oral Health of Individuals and Communities	raise awareness of oral health and its effect on general health and well-being of individuals and	<ul style="list-style-type: none"> i) Promote awareness and understanding of the relationship between oral health and general health ii) Demonstrate a commitment to oral health promotion by working with other health personnel and/or

		communities.	educational staff where appropriate iii) Facilitate patients' access to services and resources
	Value Team work and Independent Life-long Learning	Appreciate and value teamwork, life-long learning and professional development.	<ul style="list-style-type: none"> i) Support development of others and self in areas of professional practice as a dental professional ii) Place high value on continuous professional development and career progression. iii) Acquire, assess, apply and integrate new knowledge to keep medical knowledge and skills up to date. iv) Be aware of own personal and professional limits and enlist the help of colleagues and supervisors when necessary. v) Pass on the art and practice of dentistry, by being an effective mentor and teacher to students and others.
	Demonstrate Health and Safety in The Dental Laboratory	Demonstrate Health and Safety In The Dental Laboratory:	<ul style="list-style-type: none"> i. Use of protective clothing in the laboratory ii. Apply firefighting skills in the event that there is fire in the laboratory iii. Ventilate the laboratory all the time iv. Store gases safely (outside laboratory) v. Handle and store acids and electrolytes with caution vi. Apply infection prevention and control measures.

6.0 BLUEPRINT WEIGHTS BY COMPETENCIES

Weighting of Competence Areas for Theory Licensure Examination for Dip. DT

Objectives	Scientific Knowledge
1. To determine the application of knowledge in Dental Technology	20%
2. To ascertain performance of quality and reliability in the dental laboratory.	30%
3. To ascertain proficiency in Techniques & Technology.	30%
4. To assess leadership and management skills to effectively manage the Dental Practice	10%
5. To ascertain professionalism and demonstration of ethical conduct , including adherence to good Dental practice, safety and health guidelines.	10%
Total	100%

Weighting of Competence Areas for Practical Licensure Examination for Dip. DT

Objectives	Total
1. To determine the application of knowledge in Dental Technology	20%
2. To ascertain performance of quality and reliability in Dental Laboratory.	30%
3. To ascertain proficiency in the use of Dental Techniques & Technology.	30%
4. To assess leadership and management skills in Dental Practice	5%

5. To ascertain professional ^{ism} and demonstration of ethical conduct, including adherence to good Dental practice, safety and health guidelines.	15%
Total	100%

CORE PROCEDURES (LIST NOT EXHAUSTIVE)

The following procedures are the minimum standards and a full list could be found in the curriculum

Complete Dentures. Internal Medicine	1	Disinfect Impressions and Cast the Models
	2	Construct Bite Blocks.
	3	Construct Trial Dentures in Wax.
	4	Construct Final Dentures in Heat Cure Acrylic Resin.
Partial Dentures.	1	Disinfect Impressions and Cast the Models.
	2	Construct Bite Blocks where necessary.
	3	Set the teeth.
	4	Construct Trial Denture (s) in Wax.
	5	Fabricate Final Denture in Heat Cure Acrylic Resin.
	6	
Crowns & Bridge		Disinfect the Impression and Cast the Models.
	1	Pin, Base and Ditch the Models.
	2	Adapt Inlay Wax on the Preparation and Pontic where necessary.
	3	Cast the Coping
	4	Build the Crown in Dental Porcelain or Cast in Gold.
Orthodontics Surgery	1	Disinfect the Impression and Cast the Models.
	2	Trim the Model to Shape.
	3	Draw the Plan of how the Appliance will look like.
	4	Bend the Wires according to the Plan.
	5	Box -in Some Wire Springs.
	6	Soak in Water and Adapt the Acrylic Base to the Model
Special Trays		
	1	Disinfect the Impression and Cast the Models.
	2	Trim the Model to Shape.

	3	Draw 2 mm away from the Sulcus (Vestibule).
	4	Adapt a Spacer on the Model and Adapt the Special Tray Material on top of the Spacer.
	5	Finally trim and Polish the Tray.

8.0 REFERENCE MATERIALS

Oral Anatomy	1	Woelfel, J. B., Schied, R. C. 1997. Dental Anatomy: Its relevance to Dentistry, fifth edition: Williams and Wilkins, Baltimore.
	2	Atkinson, M., 2013. Anatomy for Dental Students. Oxford: UK, Oxford University.
Oral Physiology	1	Russel, W. 1994. A Textbook of Anatomy and Physiology, 4 th edition: London, W.B. Saunders Co.
Equipment & Instrumentation	1	Boyd.R.M., 2012. Dental Instruments. 4th edition: USA. Elsevier
Dental Materials	1	Anusavice, K. J., 2003. Phillips' Science of Dental Materials, 11 th edition: Elsevier, New Delhi.
	2	Van Noort, R., 2007. Introduction to Dental Materials, 3 rd edition: CV Mosby Co., Edinburgh.
Complete Dentures	1	Sowter, J. B., 1984. Removable Prosthodontic Techniques: University of North Carolina, USA.
	2	Neill, D. J. and Nairin, R. I., 1983. Complete Denture Prosthodontics, 2 nd edition: John Wright & Sons, Bristol.
Partial Dentures	1	Morrow, Rhudd and Rhodes., 1986 Dental Laboratory Procedures. C.V. Mosby Co., St Louis.
	2	Sowter, J. B., 1984. Removable Prosthodontic Techniques: University of North Carolina, USA.