



جائزة الملك عبد الله الثاني
للميزان الإداري والشفافية
الدورة الثامنة (٢٠١٦/٢٠١٧)
المرحلة الأولى

Civil Service Competency Frameworks Series for Health Professions

Medical laboratory Technologist & Assistant

Entry to Practice Competencies

Civil Service Bureau
2021



Civil Service Bureau

ديوان الخدمة المدنية

**Entry -to-Practice
Competencies**

2021

“Optimal investment of human resources ... An absolute priority and the basis for success” Civil Service Bureau Value.

**Medical laboratory
Technologist &
Assistant**



مقدمة

استكمالاً لجهود الديوان في تحقيق رؤيته في تطوير الموارد البشرية في الخدمة المدنية بشكل عام، والقطاع الصحي بشكل خاص، باعتبارها حجر الأساس في عمل وكفاءة النظام الصحي في المملكة الأردنية الهاشمية حيث يسعى الديوان جاهدا بالتعاون مع وزارة الصحة وبقية الشركاء، بايجاد آليات لتطوير الكفاءات البشرية بالقطاع الصحي، من خلال بناء اطار مرجعي للكفايات المهنية والفنية، ومؤشرات قياسها بما يكفل وجود آليات منهجية وحديثة في استقطاب الكوادر البشرية الكفؤة، وبناء البرامج التدريبية المبنية على الكفايات بالاضافة الى بناء الاوصاف الوظيفية، و تنظيم وتقييم الاداء المؤسسي والفردى بالاستناد على انواع الكفايات المختلفة.

راجيا ان اضع بين يديكم سلسلة الكتيبات للأطر المرجعية للكفايات الصحية، التي تم تطويرها مع الشركاء، كدليل توضيحي للكفايات المتوقعة من العاملين بالقطاع الصحي في الخدمة المدنية.

فادعو جميع الشركاء المعنيين من وزارات ودوائر ومؤسسات حكومية، وجامعات، و متلقي خدمة للاطلاع على سلسلة الادلة كدليل مرجعي في بناء الاوصاف الوظيفية، وأدوات التقييم والبرامج التدريبية والتحضير لاختبارات التعيين.

املا ان نكون قدمننا ما فيه نفعا للارتقاء بالقطاع الصحي في وطننا الغالي في ظل صاحب الجلالة الهاشمية الملك عبد الله الثاني ابن الحسين المعظم حفظه الله ورعاه.

رئيس ديوان الخدمة المدنية

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Introduction

Complementing the efforts of the Civil Service Bureau to meet its vision in developing the professions and employee in civil services and raising the capacity building to reach excellence in leading human resources to protect public.

CSB has developed **Medical Laboratory Framework: Competencies & Indicators** to build entry - exams for lab technician and assistant in civil services, provide framework to managers in civil sectors to build job description, provide guidance to lab technicians and assistance regarding their professional obligations, and provide a framework to assess professional performance and address in competence among them.

This framework developed by Analyzing Job Description, reviewing educational curriculums, best possible evidences of international and regional models and frameworks of laboratory technician competencies that are relevant, comprehensive and have global applications and reviewing feedback provided by lab technician in a variety of civil settings and reviewed by CSB and MOH.

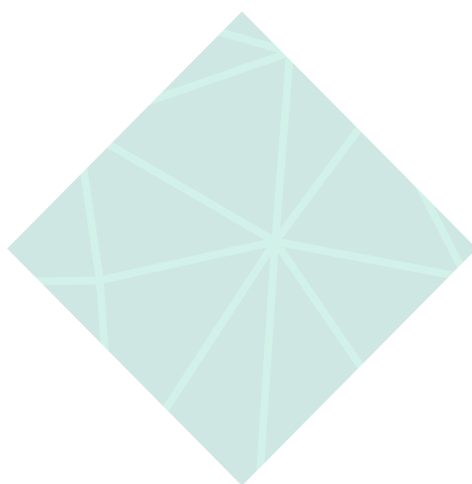
Classification of the Medical laboratory staff

■ **Medical laboratory Technician:**

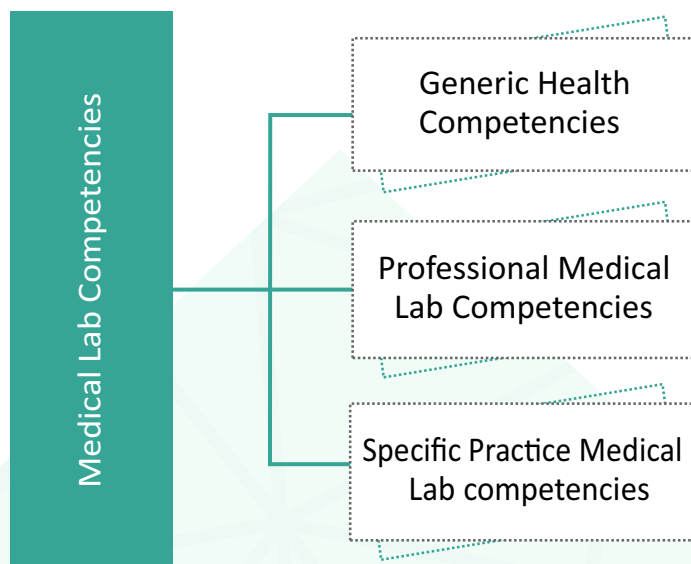
Person who completes Bachelor degree of Medical Laboratory, graduated from an accredited education program, and licensed to practice by Ministry of Health under the public health law.

■ **Medical laboratory Assistant:**

Person who completes diploma degree of Medical Laboratory graduated from an accredited education program, and licensed to practice by Ministry of Health under the public health law.



Framework of Competencies



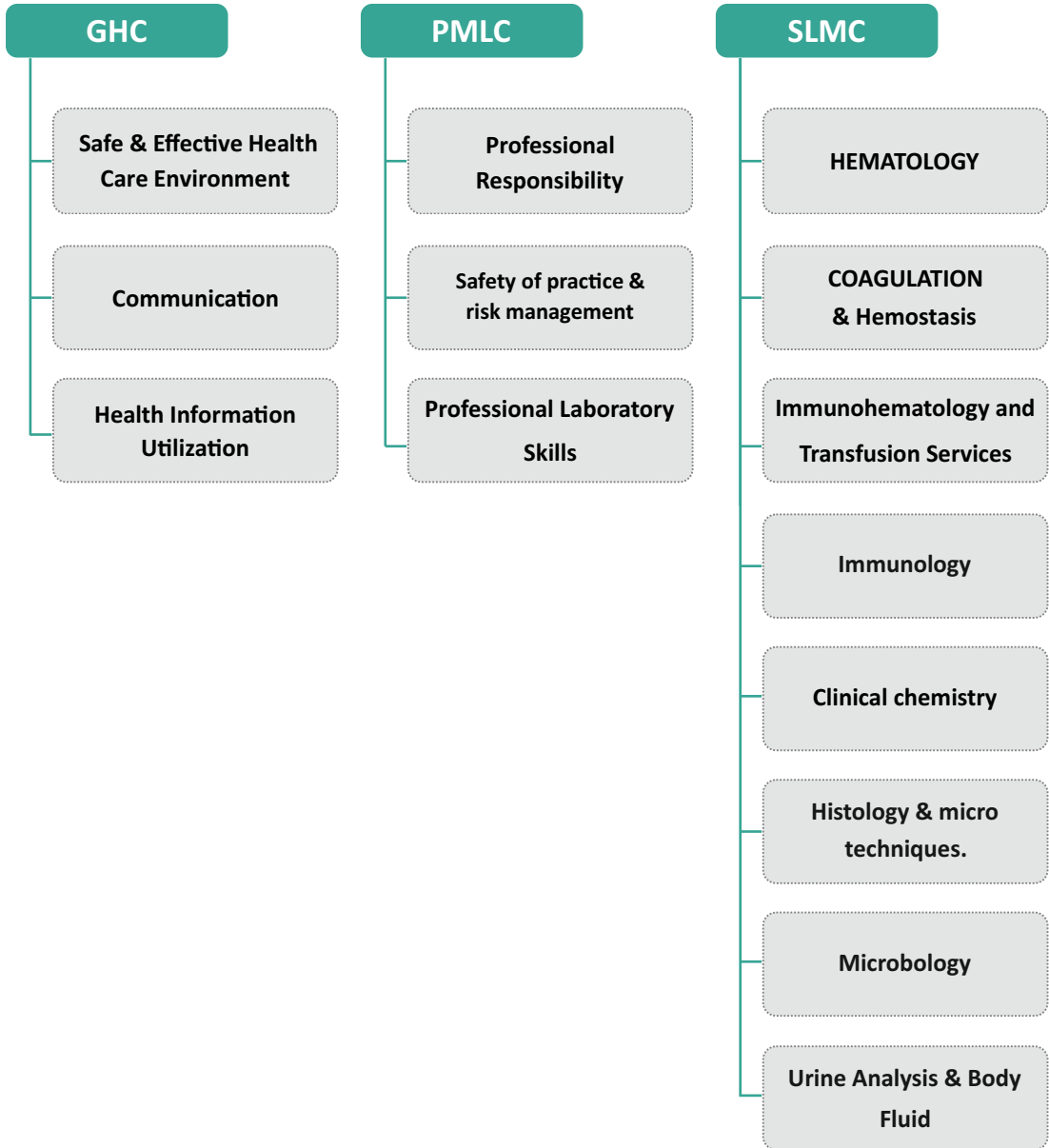
The Framework consists of three categories of competencies:

Generic Health Competencies (GHC): The competencies that are shared with all health profession in civil services that focus on provision of general healthy ethical legal care, health safety and quality practices, communication and therapeutic relationship, system-based practice, evidence-based practice and health informatics.

Professional Medical Lab Competencies (PNMLC): The competencies that promote professional safe, and regulated care environment for Medical and assistance Lab technician by promoting professional responsibilities and maintain quality in Laboratory Practices.

Specific Practice Medical Lab Competencies (SPMLC): The competencies that are most marketable for the entry to practice of Medical lab profession that focus on different scope of medical Laboratory fields, procedures, analytical and cultural tests to include hematology procedures, immunology tests, clinical chemistry tests, blood bank services, Histology analytical tests, clinical microbiology and other body fluid analysis.

Professional and Specific Practice Competencies Model for Medical Laboratory



Tables of detailed content for Medical Laboratory Technician & Assistant

Competencies & Indicators

Generic Health Competencies

Domains	Sub domains	Indicators
7.1 Safe and Effective Health Care Environment	7.1.1 Health regulations in Jordan Laws, Bylaws and Policies of MOH	7.1.1.1 Identifies legislation governing health professions in Jordan 7.1.1.2 Understand MOH laws, policies and standards 7.1.1.3 Choose the appropriate actions that show awareness of legal implications for health practices
	7.1.2 Ethics	7.1.2.1 Identify MOH code of conduct principles 7.1.2.2 Recognize ethical dilemmas and take appropriate action 7.1.2.3 Able to Provide appropriate care adhered to code of conduct
	7.1.3 Quality Improvement	7.1.3.1 Identify human factors and basic safety design principles that affect safety 7.1.3.2 Identify factors that create a culture of safety (such as, open communication strategies and organizational error reporting systems) 7.1.3.3 Describe how patients, families, individual clinicians, health care teams, and systems can contribute to promoting safety and reducing errors
7.2 Communication	7.2.1 Therapeutic Relationship	7.2.1.1 Identify principles of effective communication through various means 7.2.1.2 Able to provide care that reflects the whole person 7.2.1.3 Able to provide physical comfort and emotional support. 7.2.1.4 Select patients for reducing pain and suffering. 7.2.1.5 Mention practices for reducing fear and anxiety.
	7.2.2 Interdisciplinary Collaboration	7.2.2.1 Apply basic group skills, including communication, delegation, and time management 7.2.2.2 Ability to reach information to those who need it at the Appropriate time. 7.2.2.3 Coordinate care processes to ensure continuity of the care Provided. 7.2.2.4 Ability to resolve conflicts with other members of the team 7.2.2.5 Understands what each health team member uniquely provides in terms of patient care

Domains	Sub domains	Indicators
7.3 Utilize Health Information	7.3. Evidence Based Practice	<p>7.3.1.1 Name reliable sources for locating evidence reports and clinical practice guidelines</p> <p>7.3.1.2 Understand the Value of continuous improvement in clinical practice based on new knowledge</p> <p>7.3.1.3 Discriminate between valid and invalid reasons for modifying evidence-based clinical practice based on clinical expertise or patient/family preferences</p> <p>7.3.1.4 Seek clinical experts consultation before deciding to deviate from evidence-based protocols</p>
	7.3.2 Health Informatics	<p>7.3.2.1 Recognize the importance of information and technology skills in patient care safety</p> <p>7.3.2.2 Identify essential information that must be available in a common database to support patient care</p> <p>7.3.2.3 Understand the Value of technologies that support clinical decision-making, error prevention, and care coordination in electronic health records</p> <p>7.3.2.4 Ability to protect confidentiality of protected health information</p>

(A) Professional Medical Laboratory Technician/ Competencies

6.16 Professional Medical Laboratory Technologist Competencies

Domains	Sub domains	Indicators
6.16.1 Professional Responsibility	6.16.1.1 Ethical Performance	<p>6.16.1.1.1. Identify ethical principles</p> <p>6.16.1.1.2 Inform client/staff members of ethical issue affecting client care</p> <p>6.16.1.1.3 Understand the confidentiality of healthcare information</p> <p>6.16.1.1.4 Evaluate outcomes of interventions to promote ethical practice</p>
6.16.2 Safety of practice and risk management	6.16.2.1 Infection control	<p>6.16.2.1.1 ability to use personal protective equipment, e.g. gloves, gowns, mask, face shields, aprons</p> <p>6.16.2.1.2 Apply laboratory hygiene and infection control practices</p> <p>6.16.2.1.3 Ability to minimize possible dangers from biological specimens, laboratory supplies and equipment</p> <p>6.16.2.1.4 Mention methods of disinfection and sterilization</p> <p>6.16.2.1.5 Apply spill containment and clean up procedures for biological and other hazardous materials Employ chemical hazard safety and Safety Data Sheets (SDS)</p> <p>6.16.2.1.6 Employ equipment safety (including sharps container for needle disposal)</p>



Domains	Sub domains	Indicators
	6. 16.2.2 Reporting of Incidents	6.16.2.2.1 Describes processes used in error incidents and allocation of responsibility and accountability 6.16.2.2.2 Evaluate response to error/event/occurrence 6.16.2.2.3 Explain the interventions in unsafe practice of health care personnel appropriately 6.16.2.2.4 Reports and documents all incidents related to safety and personal injury
	6. 16.2.3 Emergency response	6.16.2.3.1 Apply measures in response to laboratory accidents/incidents 6.16.2.3.2 Understand immediate response to workplace emergencies
	6. 16.2.4 Laboratory quality	6.16.2.4.1 Demonstrate knowledge of quality control for all laboratory procedures 6.16.2.4.2 Determine the procedures for preparation of the all quality controls materials. 6.16.2.4.3 Apply laboratory mathematics; and calculate essential indices including mean, standard deviation, and coefficient of variation 6.16.2.4.4 Determine the acceptance or rejection of an analysis based on quality control rules 6.16.2.4.5 Demonstrate the knowledge of proficiency Testing & Westgard Rules.
6.16.3 Professional Laboratory Skills	6.16.3.1 Laboratory instrumentation, maintenance, and principles of operation	6.16.3.1.1 Apply the principles of clinical laboratory instrumentation 6.16.3.1.2 Use manual laboratory instrumentation (including the use of glassware and pipettes, cleaning and maintenance of instruments) 6.16.3.1.3 Calibrate instruments knowing the difference between technologies requiring calibration versus those requiring only quality control checks 6.16.3.1.4 Describe how to setup, balance, and operate centrifuge knowing durations RPM,,RCF 6.16.3.1.5 Explain automated laboratory instrumentation procedure
	6.16.3.2 Laboratory mathematics	6.16.3.2.1 Demonstrate understanding of normal solutions, molar solutions, and percentage solutions (w/w,w/v, v/v)



Domains	Sub domains	Indicators
		<p>6.16.3.2.2 Able to calculate the equivalent weights and dilutions for most frequently used solutions in the clinic laboratory</p> <p>6.16.3.2.3 Demonstrate knowledge of Abbreviations / Designations used for weights and measures.</p>
	6.16.3.3 Microscopy	<p>6.16.3.3.1 Demonstrate knowledge of microscopy including types of microscopes and parts of binocular microscope.</p> <p>6.16.3.3.2 Determine the procedures for calibration of ocular micrometer.</p>
	6.16.3.4 Phlebotomy and specimen collection	<p>6.16.3.4.1 Identify the procedure for Collecting (including infant collection-heel puncture) and processing of all specimens for analysis</p> <p>6.16.3.4.2 Select the preferred vein puncture site.</p> <p>6.16.3.4.3 Identify the recommended site for capillary puncture site.</p> <p>6.16.3.4.4 Implement the procedures for handling and storage of all type of specimen including body fluids such as CSF..etc</p> <p>6.16.3.4.5 Understand the physiology and composition, physical and chemical examination, microscopic and microbiological examination for certain body fluids including (CSF Amniotic, Synovial, Serous, Semen).</p> <p>6.16.3.4.6 Evaluate the suitability of specimens for analysis.</p> <p>6.16.3.4.7 Determine pre analytical, analytical & post analytical causes of erroneous results.</p> <p>A. Pre- Analytical: Knowledge of</p> <ol style="list-style-type: none"> 1) Patient or specimen identification 2) Sample types and containers 3) Sample preparation 4) Sample rejection <p>B. Analytical: Knowledge of</p> <ol style="list-style-type: none"> 1) prepare sample for Processing 2) prepare sample for Handling <p>C. Post Analytical:</p> <ol style="list-style-type: none"> 1) adhere to Sample disposal guidelines 2) apply Sample retention and storage procedures 3) Ability to Report, Record and document Results. <p>6.16.3.4.8 Discriminate between serum, plasma, and whole blood</p> <p>6.16.3.4.9 Apply procedures to prevent hemolysis</p> <p>6.16.3.4.10 Recognize the proper order of draw when collecting Blood in multiple types of vacum tubes</p>



Domains	Sub domains	Indicators
		6.16.3.4.11 Apply proper anticoagulants for each analysis and know effects of improper anticoagulant use. 6.16.3.4.12 Know how many inversions needed when collecting samples in tubes contain anticoagulant 6.16.3.4.13 Identify length of time in which samples clot. 6.16.3.4.14 Apply procedure for blood culture collection 6.16.3.4.15 Apply the procedure for glucose tolerance test.
	6.16.3.5 Patient Identification	6.16.3.5.1 Assure continual accuracy of patient identification (including STAT samples). 6.16.3.5.2 List Patient Identification information required e. g. patient name ,DOB, ,registration No.,& other identifies with tests and orders to confirm positive patient identification

(B) Specific /Practice Medical Laboratory Technologist Competencies

5.16 Specific Medical Laboratory Technologist Competencies

Domains	Sub domains	Indicators
5.16.1 Hematology	5.16.1.1 General Principles	5.16.1.1.1 Define terminology associated with hematology: 5.16.1.1.2 Understand the cellular structures and functions of blood (RBC, WBC, PLT) 5.16.1.1.3 Name the CBC parameters that measured directly 5.16.1.1.4 Demonstrate knowledge of flow cytometry 5.16.1.1.5 List the maturation series of erythrocytes, leukocytes, and thrombocytes erythrocyte production and destruction 5.16.1.1.6 Explain the process of preparing and staining of peripheral blood smear and bone marrow slides 5.16.1.1.7 Examine peripheral blood smear and correlate with CBC 5.16.1.1.8 Understand bone marrow aspiration procedure; touch preps from bone biopsies and bone marrow aspirate
	5.16.1.2 Erythrocytes procedures	5.16.1.2.1 Apply manual and automated methods of RBC count 5.16.1.2.2 Apply manual and automated methods of hemoglobin 5.16.1.2.3 Recognize interfering substances in hemoglobin measurement 5.16.1.2.4 Apply manual and automated methods of hematocrit 5.16.1.2.5 Apply manual and automated methods of reticulocyte. 5.16.1.2.6 Calculate red blood cell indices: MCV, MCH, MCHC 5.16.1.2.7 Apply erythrocyte sedimentation rate (ESR) test-Wintergreen



Domains	Sub domains	Indicators
		<p>5.16.1.2.8 Mention the types of specimens producing falsely-elevated ESR values</p> <p>5.16.1.2.9 Prepare slides and evaluate for identification of malarial parasites</p>
	5.16.1.3 Leukocyte Procedures	<p>5.16.1.3.1 Apply manual and automated methods of WBC count</p> <p>5.16.1.3.2 Apply manual and automated methods of WBC differentials</p> <p>5.16.1.3.3 Identify Correct leukocyte count for nucleated red blood cells</p> <p>5.16.1.3.4 Correlate between leukocyte disorders and WBC differential</p> <p>5.16.1.3.5 Calculate absolute WBC counts.</p> <p>5.16.1.3.6 Differentiate the maturation series between granulocytes (neutrophils, eosinophils, and basophils) and no granulocytes (lymphocytes and monocytes)</p> <p>5.16.1.3.7 Perform cytochemical staining</p> <p>5.16.1.3.8 Mention the cytogenetic abnormalities associated with hematologic neoplasms</p> <p>5.16.1.3.9 Relate between molecular assays and the diagnosis of hematologic neoplasms</p>
	5.16.1.4 Thrombocyte Procedures	<p>5.16.1.4.1 Identify blood smear for platelets.</p> <p>5.16.1.4.2 Apply manual and automated methods of platelet count</p> <p>5.16.1.4.3 List the sources of platelet counts errors</p> <p>5.16.1.4.4 Apply corrective actions for platelet counts errors</p>
5.16.2 Coagulation & Hemostasis	5.16.2.1 General principles	<p>5.16.2.1.1 Interpret basic medical laboratory terminology related Coagulation & Hemostasis (adhesion fibrinogen, prothrombin, plasminogen)</p> <p>5.16.2.1.2 Explain the concepts of Coagulation & Homeostasis (role of platelets, steps of the mechanism of coagulation, intrinsic pathway, extrinsic pathway, role of the coagulation factors.)</p> <p>5.16.2.1.3 Identify uses of prothrombin time(PT) & International normalized ratio (INR) testing for monitoring anticoagulation (e.g., warfarin and heparin) therapy, activated partial thromboplastin time(APTT).</p>
	5.16.2.2 Coagulation Procedures	<p>5.16.2.2.1 Apply prothrombin time (PT), APTT, fibrinogen, and D-dimer tests</p> <p>5.16.2.2.2 Apply fibrin degradation (FDP)</p>



Domains	Sub domains	Indicators
5.16.3 Immunohematology and Transfusion Services		5.16.2.2.3 Apply heparin assay 5.16.2.2.4 Apply mixing studies; factor testing 5.16.2.2.5 Apply platelet function testing 5.16.2.2.6 Apply thrombophilia screening tests.
	5.16.3.1 Blood typing	5.16.3.1.1 Identify principles of: <ul style="list-style-type: none"> Antigen-antibody reactions, chemical structures of the H, A, and B antigens, Antigens and antibodies of the ABO system, Frequencies of antigen phenotypes, and genotypes of the ABO and Rho(D) systems 5.16.3.1.2 Examine ABO forward and reverse typing 5.16.3.1.3 Identify subgroup typing for A, B and AB 5.16.3.1.4 Identify Rh(D) Typing And Du (Weak D) Testing 5.16.3.1.5 Recognize RBC antigen phenotyping and frequency of antigen distribution for provision of antigen-negative blood for transfusion
	5.16.3.2 Compatibility Testing Principles & Procedures	5.16.3.2.1 Identify compatibility (cross match) methods and requirements 5.16.3.2.2 Apply compatibility (cross match) methods and requirements 5.16.3.2.3 Interpret compatibility test results 5.16.3.2.4 Select Correctly red cells that are antigen negative for patients with antibodies 5.16.3.2.5 Select Correctly ABO-compatible FFP for transfusion 5.16.3.2.6 Select Correctly red blood cells for patients with special needs requirements: CVM-negative and irradiated 5.16.3.2.7 Apply indirect anti globin test (IAT), 5.16.3.2.8 Describe direct anti globin test (DAT) ,
	5.16.3.3 Blood banking practices	5.16.3.3.1 Apply phlebotomy blood from donors 5.16.3.3.2 Perform quality control on all reagents 5.16.3.3.3 Understand the importance of maintaining proper records of all quality control and blood bank procedures 5.16.3.3.4 Identify the purpose and criteria for therapeutic phlebotomy 5.16.3.3.5 Recognize reasons for special requirements of blood products (e.g. CMV- negative, leukocyte-reduced, irradiated, massive transfusion protocols, and baby units)



Domains	Sub domains	Indicators
		<p>5.16.3.3.6 Evaluate blood donor collection requirements and deferrals.</p> <p>5.16.3.3.7 Apply emergent and routine transfusion administration protocols.</p> <p>5.16.3.3.8 Apply blood component preparation:</p> <ul style="list-style-type: none"> ◆ RBCs ◆ Plasma ◆ Platelets ◆ Cryo precipitate
5.16.4 Immunology	5.16.4.1 General principles of immunology	<p>5.16.4.1.1 Define terminology associated with immunology and serology</p> <p>5.16.4.1.2 Know principles of immunology (antibody production, antigen-antibody Reaction)</p> <p>5.16.4.1.3 Recall factors affecting antigen-antibody reactions (temperature, pH, incubation time, ionic strength,,,,,</p>
	5.16.4.2 Serological Tests for Syphilis	<p>5.16.4.2.1 Recognize syphilitic stages of infection</p> <p>5.16.4.2.2 Examine qualitative and quantitative tests for syphilis (VDRL, RPR)</p>
	5.16.4.3 Analytic Procedures	<p>5.16.4.3.1 Apply analytic procedures for</p> <ul style="list-style-type: none"> ◆ heterophile agglutination (mono) tests ◆ febrile agglutination tests ◆ C-reactive protein (CRP) slide tests ◆ Antistreptolysin screen and titer (ASO) test ◆ Arthritis (RA) tests ◆ Systematic lupus erythematosus (SLE or LE) tests ◆ Antinuclear antibody (ANA) tests ◆ Antigen detection ◆ Pregnancy tests
5.16.5 Clinical chemistry	5.16.5.1 Terminology and Instrumentation	<p>5.16.5.1.1 Define clinical chemistry Terminology (spectrophotometry, chromatography, chemiluminescence electrophoresis, enzyme linked immunoassay (ELISA) mass spectrometry, turbidimetry, refractometry& PCR)</p> <p>5.16.5.1.2 Define terminology related to principles of clinical laboratory instrumentation: radiant energy, visual spectrum /wavelength, Beer-Lambert Law, end point reactions, kinetic/rate reactions .</p>



Domains	Sub domains	Indicators
	5.16.5.2 Renal function test	5.16.5.2.1 Mention the name of all tests relating kidney function tests. 5.16.5.2.2 Ability to perform common renal function tests (non-protein nitrogen's), clearance tests, and estimated glomerular filtration rate 5.16.5.2.3 Identify the reference limits 5.16.5.2.4 Ability to perform renal function tests and correlate results with pathological conditions affecting kidney function
	5.16.5.3 Water and electrolytes	5.16.5.3.1 Name the electrolytes in body fluids 5.16.5.3.2 Mention common causes of electrolyte imbalances 5.16.5.3.3 Ability to measure electrolytes and interpret abnormal test results to determine type of imbalance 5.16.5.3.4 Apply methodology for measurement and calculate osmolality.
	5.16.5.4 Hepatic function tests	5.16.5.4.1 Perform common hepatic function tests 5.16.5.4.2 Understand different types of bilirubin, jaundice, and formation of bilirubin and urobilinogen 5.16.5.4.3 Identify tests that will elevated in liver disease, obstructive jaundice, and hemolytic jaundice
	5.16.5.5 Lipids	5.16.5.5.1 Define the concepts related to lipids 5.16.5.5.2 Understand the metabolism of cholesterol and triglycerides 5.16.5.5.3 Able to perform lipid analyses and correlate hyperlipidemia with coronary artery disease 5.16.5.5.4 Identify desirable limits for total cholesterol, LDL, and HDL
	5.16.5.6 Enzymology	5.16.5.6.1 Differentiate clinically-significant enzymes (CP, ALP, ALT, AST, CK, GGT, LD, lipase, amylase), Isoenzymes (CK, ALP, LD Pancreatic enzymes) 5.16.5.6.2 Ability to Measure enzyme activity 5.16.5.6.3 Differentiate liver diseases based on elevated enzyme indications 5.16.5.6.4 Recognize acid phosphatase and alkaline phosphatase and correlate with disease states 5.16.5.6.5 Identify cardiac enzymes and test results. 5.16.5.6.6 Ability to perform cardiac marker tests: troponin T and I, myoglobin, B natriuretic peptide (BNP),
	5.16.5.7 Endocrinology	5.16.5.7.1 Understand endocrinology concepts: ♦ Glands and hormones of the endocrine system



Domains	Sub domains	Indicators
		<ul style="list-style-type: none"> ◆ Function of hormones ◆ Feedback mechanisms ◆ Common tests and reference ranges ◆ Conditions resulting from hypo- and hyper secretion of hormones <p>5.16.5.7.2 Apply thyroid function tests (thyroxin, TBG, free T3, free T4, TSH)</p> <p>5.16.5.7.3 Apply tests for reproductive hormones (FSH, LH, estriol, estradiol, estrogen, testosterone, 17-ketosteroids)</p> <p>5.16.5.7.4 Apply tests for pregnancy hormones (HCG, prolactin)</p>
	5.16.5.8 Acid –base balance	<p>5.16.5.8.1 Define concepts related to acid-base balance; hydrogen ion concentration (pH); regulation of acid-base balance by kidneys and lungs</p> <p>5.16.5.8.2 Understand the relationships between pH, bicarbonate, and carbonic acid (Henderson-Hasselbach equation)</p> <p>5.16.5.8.3 Describe common acid-base imbalances</p> <p>5.16.5.8.4 Demonstrate knowledge of tests for acid-base balance</p>
	5.16.5.9 Protein analysis	<p>5.16.5.9.1 Identify the structure and function of plasma proteins; synthesis, distribution, catabolism, and excretion of proteins; protein classification</p> <p>5.16.5.9.2 Perform tests measuring total protein, albumin, globulin, and immunoglobulin's;</p> <p>5.16.5.9.3 Mention the reference limits</p> <p>5.16.5.9.4 Describe principles of protein electrophoresis; recognize and interpret normal and disease patterns in serum protein electrophoresis</p> <p>5.16.5.9.5 Perform clinical protein analysis</p> <p>5.16.5.9.6 Correlate between protein test results with disease states</p>
	5.16.5.10 Other Chemistry Procedures	<p>5.16.5.10.1 Recognize tumor markers</p> <p>5.16.5.10.2 Recognize principles of electrophoresis; protein electrophoresis, immune electrophoresis, isoenzyme electrophoresis (LDH, CK, alkaline phosphatase), hemoglobin electrophoresis</p> <p>5.16.5.10.3 Identify principles of therapeutic drug monitoring and toxicological tests</p> <p>5.16.5.10.4 Perform tests for drugs of abuse</p>



Domains	Sub domains	Indicators
		5.16.5.10.5 Perform and interpret tests for specific disease states such as the presence of gout; perform test for uric acid.
	5.16.6.1 Pre Analytical	5.16.6.1.1 Determine specimen identification 5.16.6.1.2 Mention sample types and containers 5.16.6.1.3 Ability to perform techniques for sample preparation 5.16.6.1.4 Apply techniques of Grossing, 5.16.6.1.5 Ability to manage sample rejection
	5.16.6.1 Pre Analytical	5.16.6.2.1 Able to perform tissue preparation techniques (Grossing Processing , Embedding ,Sectioning 5.16.6.2.2 Assess quality of the preparation and initiates corrective action and/or follow up
	5.16.6.3 Post Analytical	5.16.6.3.1 Ability to manage sample retention and storage 5.16.6.3.2 Ability to adhere to sample disposal policies
5.16.7 Microbiology	5.16.7.1 General Principle of medical and clinical microbiology	5.16.7.1.1 Define terminology associated with bacteriology: <ul style="list-style-type: none"> ◆ bacteria osmosis capsule mesophilic ◆ autotrophic semipermeable ambient thermophilic ◆ heterotopic cytoplasm nucleus bacteriophage ◆ pathogenic cell wall/membrane spore facultative aerobic ◆ flagella microaerophilic aerobic facultative anaerobic phagocytosis anaerobic Pili 5.16.7.1.2 Identify shapes and arrangements of bacteria; know growth curves 5.16.7.1.3 Apply staining procedures 5.16.7.1.4 Interpret/identify structures through microbiological slide preparations 5.16.7.1.5 Apply quality control procedures based on standards of the Clinical and Laboratory Standards Institute (CLSI)
	5.1.7.2 Bacteriology	5.16.7.2.1 List various methods of bacterial identification 5.16.7.2.2 Able to examine stained smears 5.16.7.2.3 Able to examine smears for acid-fast bacilli 5.16.7.2.4 Mention various systems of bacterial identification (API, automated systems, biochemical and carbohydrate systems)



Domains	Sub domains	Indicators
		5.16.7.2.5 Perform bacterial identification using biochemical and carbohydrate systems
	5.16.7.3 Media Quality Control, Techniques, and Cultures	<p>5.16.7.3.1 Name the additives used in media preparation</p> <p>5.16.7.3.2 Prepare bacterial smears and stains (Gram's, acid-fast, and other stains)</p> <p>5.16.7.3.3 Explain the uses of bacterial culture methods: selective and differential media, enrichment procedures, anaerobic media and techniques, living host cells, candle jars</p> <p>5.16.7.3.4 Able to prepare specimens and identify rejection criteria</p> <p>5.16.7.3.5 Ability to culture clinical specimens: blood, urine, stool (feces), sputum, throat, spinal fluid, upper respiratory, wound, abscess, other body fluids/ tissue specimens, urethral/cervical/gynecological, catheter tip (intravenous), and intrauterine devices (IUD)</p> <p>5.16.7.3.6 Apply proper processing and planting of Specimens.</p> <p>5.16.7.3.7 Able to prepare gram stain and result interpretation</p> <p>5.16.7.3.8 Interpret morphological characteristics</p> <p>5.16.7.3.9 Isolate, identify, and differentiate microorganisms</p> <p>5.16.7.3.10 Identify normal flora from cultures</p> <p>5.16.7.3.11 Recognize pathogens from cultures</p> <p>5.16.7.3.12 Understand the policies for proper collection and rejection of specimens for the clinical microbiological laboratory</p> <p>5.16.7.3.13 Ability to concentrate and culture sputum for acid-fast bacilli</p> <p>5.16.7.3.14 Ability to perform multi-drug resistant tuberculosis (MDR-TB) tests</p> <p>5.16.7.3.15 Able to perform quality control on media based on standards of the Clinical and Laboratory .</p>
	5.16.7.3 Media Quality Control, Techniques, and Cultures	<p>5.16.7.4.1 Recognize streptococcal testing: rapid enzyme immunoassay test (or other antigen detection kits) from throat swabs; cultures for beta hemolysis screening; bacterial identification</p> <p>5.16.7.4.2 Apply Helicobacter pylori screening; shiga toxin test</p> <p>5.16.7.4.3 Apply antimicrobial susceptibility testing (Kirby Bauer, MIC, and automated systems)</p>



Domains	Sub domains	Indicators
		5.16.7.4.4 Able to perform fecal occult blood and immunochemical test 5.16.7.4.5 perform molecular assays in bacteriology
	5.16.7.4 Special Tests	5.16.7.4.1 Recognize streptococcal testing: rapid enzyme immunoassay test (or other antigen detection kits) from throat swabs; cultures for beta hemolysis screening; bacterial identification 5.16.7.4.2 Apply Helicobacter pylori screening; shiga toxin test 5.16.7.4.3 Apply antimicrobial susceptibility testing (Kirby Bauer, MIC, and automated systems) 5.16.7.4.4 Able to perform fecal occult blood and immunochemical test 5.16.7.4.5 perform molecular assays in bacteriology
	5.16.7.5 Bacterial Identification	5.16.7.5.1 Mention various methods of bacterial identification 5.16.7.5.2 Examine stained smears 5.16.7.5.3 Examine smears for acid-fast bacilli 5.16.7.5.4 List various systems of bacterial identification (API, automated systems, biochemical and carbohydrate systems) 5.16.7.5.5 Able to perform bacterial identification using biochemical and carbohydrate systems 5.16.7.5.6 Isolate, identify, and differentiate gram-positive cocci 5.16.7.5.7 Isolate, identify, and differentiate gram-positive bacilli 5.16.7.5.8 Isolate, identify, and differentiate gram-negative cocci and coccobacilli 5.16.7.5.9 Isolate and identify gram-negative Enterobacteriaceae and differentiate genera and species 5.16.7.5.10 Isolate, identify, and differentiate gram negative bacilli: Brucella; Bordetella; Pseudomonas; Campylobacter; anaerobic bacteria, bactericides group, antinomies, Clostridium difficile) 5.16.7.5.11 Demonstrate understanding of MRSA 5.16.7.5.12 Understand the emergence and significance of multi-drug resistant organisms (MRDO) 5.16.7.5.13 Recognize the significance of vancomycin-resistant Enterococcus.
	5.16.7.6 Mycology & Viruses	5.16.7.6.1 List types, descriptions, and classifications of mycological organisms 5.16.7.6.2 Able to prepare clinical specimens for mycological studies (KOH and fungal cultures)



Domains	Sub domains	Indicators
		5.16.7.6.3 Identify mycological organisms in clinical specimens 5.16.7.6.4 Apply of laboratory procedures for specimen submitted for diagnostic evaluation of viruses
	5.16.7.7 Parasitology	5.16.7.7 .1 Differentiate types, descriptions, and classifications of parasites 5.16.7.7.2 Able to prepare clinical specimens for parasitological studies 5.16.7.7.3 Able to perform examination for parasites in clinical specimens 5.16.7.7.4 Identify parasites in clinical specimens
	5.16.8.1 General Knowledge	5.16.8.1.1 Perform of specimen collection, handling, preservation, and processing for random, midstream, catheterized, and timed (2, 12,24-hour) specimens 5.16.8.1.2 Understand renal function; formation of urine; renal anatomy and physiology 5.16.8.1.3 Examine physical and chemical properties of urine
	5.16.8.2 Urinalysis Procedures	5.16.8.2.1 Able to perform physical examination of urine (color, clarity, specific gravity) 5.16.8.2.2 Able to perform chemical examination of urine: Chemical tests (pH, glucose, nitrate, urobilinogen, protein, ketones, bilirubin, blood, leukocyte esterase) 5.16.8.2.3 Able to perform Confirmatory tests (Clingiest, Ictuses®, Acutest®, sulfosalicylic acid (SSA) 5.16.8.2.4 Able to perform microscopic examination of urine; identify microscopic structures found in urine 5.16.8.2.5 Correlate complete urinalysis results with normal and disease states.
	5.16.8.3 Special tests	5.16.8.3.1 Ability to perform manual testing (refractometer, myoglobin, glucose, bilirubin, acetone, stool and gastric secretions for occult blood) 5.16.8.3.2 Ability to perform body fluid counts and semen analyses

(A) Professional Medical Laboratory Assistants Competencies**(B) Specific /Practice Medical Laboratory Assistants Competencies****6.17 A .Professional Medical Laboratory Assistants Competencies**

Domains	Sub domains	Indicators
6.17.1 Professional Responsibility	6.17.1.1 Ethical Performance	6.17.1.1.1 Identify ethical principles 6.17.1.1.2 Inform client/staff members of ethical issues affecting client care 6.17.1.1.3 Understand the confidentiality of healthcare information 6.17.1.1.4 Evaluate outcomes of interventions to promote ethical practice
6.17.2 Safety of practice and risk management	6.17.2.1 Infection control	6.17.2.1.1 Ability to use personal protective equipment, e.g. gloves, gowns, mask, face shields, aprons 6.17.2.1.2 Apply laboratory hygiene and infection control practices 6.17.2.1.3 Ability to minimizes possible dangers from biological specimens, laboratory supplies and equipment 6.17.2.1.4 Mention the methods of disinfection and sterilization 6.17.2.1.5 Apply spill containment and clean up procedures for biological and other hazardous materials 6.17.2.1.6 Employ chemical hazard safety and Safety Data Sheets (SDS) 6.17.2.1.7 Employ equipment safety (including sharps container for needle disposal)
	6.17.2.2 Laboratory quality	6.17.2.2.1 Recognize quality control for all laboratory procedures 6.17.2.2.2 Determine the procedures for preparation of the all quality controls materials. 6.17.2.2.3 Apply laboratory mathematics; understand and calculate essential indices including mean, standard deviation, and coefficient of variation

6.17 A .Professional Medical Laboratory Assistants Competencies

Domains	Sub domains	Indicators
6.17.3 Professional Laboratory Skills	6.17.3.1 Laboratory instrumentation, maintenance, and principles of operation	<p>6.17.3.1.1 Apply the principles of clinical laboratory instrumentation</p> <p>6.17.3.1.2 Use manual laboratory instrumentation (including the use of glassware and pipettes, and the cleaning and maintenance of instruments)</p> <p>6.17.3.1.3 Able calibrate instruments knowing the difference between technologies requiring calibration versus those requiring only quality control checks</p> <p>6.17.3.1.4 Understand all the processes related to centrifuge e. g. Setup, balance, operate and durations RPM,RCF</p> <p>6.17.3.1.5 Apply automated laboratory instrumentation</p>
	6.17.3.2 Laboratory mathematics	<p>6.17.3.2.1 Able to perform laboratory mathematics</p> <p>6. 17.3.2.2 Understand essential indices including mean, standard deviation, coefficient of variation, and related calculations.</p> <p>6.17.3.2.3 recognize abbreviations/designations used for weights and measures</p>
	6.17.3.3 Microscopy	<p>6.17.3.3.1 Define microscopy including types of microscopes and parts of binocular microscope.</p> <p>6.17.3.3.2 Determine the procedures for calibration of ocular micrometer</p>

6.17 A .Professional Medical Laboratory Assistants Competencies

Domains	Sub domains	Indicators
6.17.3 Professional Laboratory Skills	6.17.3.4 Phlebotomy and specimen collection	<p>6.17.3.4.1 Understand the procedure for Collecting (including infant collection-heel puncture) and processing of all specimens for analysis</p> <p>6.17.3.4.2 Identify the preferred vein puncture site.</p> <p>6.17.6.4.3 Mention the recommended site for capillary puncture site.</p> <p>6.17.6.4.4 Understand the procedures for handling and storage of all type of specimen including body fluids such as CSF.etc</p> <p>6.17.3.4.5 Discriminate between serum, plasma, and whole blood</p>



Domains	Sub domains	Indicators
	6.17.3.5 Patient Identification	<p>6.17.3.4.6 Employ procedures to prevent hemolysis</p> <p>6.17.3.4.7 Employ proper order of draw when collecting blood in multiple types of vacuum tubes</p> <p>6.17.3.4.8 Employ proper anticoagulants for each analysis and know effects of improper anticoagulant use.</p> <p>6.17.3.4.9 Know how many inversions needed when collecting samples in tubes contain anticoagulant</p> <p>6.17.3.4.10 Identify length of time in which samples clot.</p> <p>6.17.3.4.11 Know procedure for blood culture collection</p> <p>6.17.3.4.12 Understand the procedure for glucose tolerance test.</p> <p>6.17.3.5.1 Assure continual accuracy of patient identification (including STAT samples).</p> <p>6.17.3.5.2 List Patient Identification information required e. g. patient name ,DOB, ,registration No.,& other identifies with tests and orders to confirm positive patient identification</p>

5.17 B Specific Medical Laboratory Assistants Competencies

Domains	Sub domains	Indicators
5.17.1 Hematology	5.17.1.1 General principles	<p>5.17.1.1.1 Define terminology associated with hematology:</p> <p>5.17.1.1.2 Know functions and cellular structures of blood (RBC, WBC, PLT)</p> <p>5.17.1.1.3 Examine peripheral blood smear and correlate with CBC</p> <p>5.17.1.2.1 Apply manual and automated methods count of RBC</p>
	5.17.1.2 Erythrocytes procedures	<p>5.17.1.2.2 Apply manual and automated methods of hemoglobin test</p> <p>5.17.1.2.3 Address interfering substances in hemoglobin measurement</p> <p>5.17.1.2.4 Apply manual and automated methods hematocrit</p> <p>5.17.1.2.5 Apply reticulocyte counts and calculations</p> <p>5.17.1.2.6 Able to calculate red blood cell indices: MCV, MCH, MCHC</p> <p>5.17.1.2.7 Apply erythrocyte sedimentation rate (ESR) –Wintergreen test</p>



Domains	Sub domains	Indicators
		5.17.1.2.8 Recognize types of specimens producing falsely-elevated ESR values 5.17.1.2.9 Prepare slides and evaluate for identification of malarial parasites
	5.17.1.3 Leukocyte Procedures	5.17.1.3.1 Apply manual and automated methods of WBC count 5.17.1.3.2 Able to perform WBC differentials test
	5.17.1.4 Thrombocyte Procedures	5.17.1.4.1 Able to use manual and automated methods of platelet count
	5.17.1.5 Automated Instrumentation	5.17.1.5.1 Recognize which CBC parameters are measured directly 5.17.1.5.2 Interpret patient data using WBC/RBC histogram or cytogram 5.17.1.5.3 Ability to perform QC and investigate QC failures
5.17.2 Coagulation & Hemostasis	5.17.2.1 General principles	5.17.2.1.1 Interpret basic medical laboratory terminology related Coagulation & Hemostasis (adhesion, fibrinogen, prothrombin, plasminogen) 5.17.2.1.2 Identify uses of prothrombin time(PT) & international normalized ratio (INR) testing for monitoring anticoagulation (e.g., warfarin and heparin) therapy, activated partial thromboplastin time(APTT)
	5.17.2.2 Coagulation Procedures	5.17.2.2.1 Apply prothrombin time (PT), APTT, fibrinogen, and D-dimer tests

5.17 B Specific Medical Laboratory Assistants Competencies

Domains	Sub domains	Indicators
5.17.3 Immunohe-matology and Transfusion Services	5.17.3.1 Blood typing	5.17.3.1.1 Identify principles of: <ul style="list-style-type: none"> ◆ Antigen-antibody reactions ◆ chemical structures of the H, A, and B antigens ◆ Antigens and antibodies of the ABO system ◆ Frequencies of antigen phenotypes 5.17.3.1.2 Examine ABO forward and reverse typing 5.17.3.1.3 Identify subgroup typing for A ,B and AB 5.17.3.1.4 Identify Rh (D) Typing And Du (Weak D) Testing



Domains	Sub domains	Indicators
		5.17.3.1.5 Recognize RBC antigen phenotyping and frequency of antigen distribution for provision of antigen-negative blood for transfusion
	5.17.3.2 Compatibility Testing Principles and Procedures	5.17.3.2.1 Understand compatibility (crossmatch) methods and requirements 5.17.3.2.2 Interpret compatibility test results 5.17.3.2.3 Select red cells that are antigen negative for patients with antibodies Correctly 5.17.3.2.4 Select ABO-compatible FFP for transfusion Correctly 5.17.3.2.5 Select red blood cells Correctly for patients with special needs requirements: CVM- negative and irradiated
	5.17.3.3 Blood banking practices	5.17.3.3.1 Ability to draw blood from donors
5.17.4 Immunology	5.17.4.1 General principles of immunology	5.17.4.1.1 Define terminology associated with immunology and serology
	5.17.4.2 Serological Tests for Syphilis	5.17.4.2.1 recognize qualitative and quantitative tests for syphilis (VDRL, RPR)
	5.17.4.3 Analytic Procedures	5.17.4.3.1 Understand of C-reactive protein (CRP) slide tests 5.17.4.3.2 Identify antistreptolysin screen and titer (ASO) 5.17.4.3.3 Identify rheumatoid arthritis (RA) tests 5.17.4.3.4 Select pregnancy tests

5.17 B Specific Medical Laboratory Assistants Competencies

Domains	Sub domains	Indicators
5.17.5 Clinical chemistry	5.17.5.1 Terminology & Instrumentation	5.17.5.1.1 Define clinical chemistry terminology (spectrophotometry, chromatography, chemiluminescence electrophoresis, enzyme linked immunoassay (ELISA) mass spectrometry, turbidimetry, refractometry
	5.17.5.2 Renal function test	5.17.5.2.1 Name all tests relating kidney function test
	5.17.5.3 Water and electrolytes	5.17.5.3.1 Recall the electrolytes in body fluids 5.17.5.3.2 Mention common causes of electrolyte imbalances



Domains	Sub domains	Indicators
	5.17.5.4 Hepatic function tests	5.17.5.4.1 Able to perform common hepatic function tests 5.17.5.4.2 Identify types of bilirubin and types of jaundice, and understand the formation of bilirubin and urobilinogen 5.17.5.4.3 Recognize differentiate tests that are elevated in liver disease, obstructive jaundice, and hemolytic jaundice
	5.17.5.5 Lipids	5.17.5.5.1 Define the concepts related to lipids 5.17.5.5.2 Understand the metabolism of cholesterol and triglycerides
	5.17.5.6 Enzymology	5.17.5.6.1 Understand enzymology concepts: Clinically-significant enzymes (CP, ALP, ALT, AST, CK, GGT, LD, lipase, amylase), Isoenzymes (CK, ALP, LD Pancreatic enzymes)
	5.17.5.7 Endocrinology	5.17.5.7.1 Recognize thyroid function tests (thyroxin, TBG, free T3, free T4, TSH)
	5.17.5.8 Protein analysis	5.17.5.8.1 Able to perform tests measuring total protein, albumin, globulin, and immunoglobulin's
5.17.6 Histology & micro techniques.	5.17.6.1 Pre- Analytical	5.17.6.1.1 Demonstrate knowledge of Patient or specimen identification 5.17.6.1.2 Identify Sample types and containers 5.17.6.1.3 Select techniques for sample preparation 5.17.6.1.4 Determine techniques of Grossing, 5.17.6.1.5 Manage sample rejection
	5.17.6.2 Analytical	5.17.6.2.1 Able to perform tissue preparation techniques Grossing Processing, Embedding , Sectioning 5.17.6.2.2 Assess quality of the preparation and initiates corrective action and/or follow up
	5.17.6.3 Post Analytical	5.17.6.3.1 Manage sample retention and storage Sample disposal laws and regulations



5.17 B Specific Medical Laboratory Assistants Competencies

Domains	Sub domains	Indicators
5.17.7 Microbiology	5.17.7.1 General Principle of medical and clinical microbiology:	5.17.7.1.1 Define terminology associated with bacteriology: <ul style="list-style-type: none"> ◆ bacteria osmosis capsule mesophilic ◆ autotrophic semipermeable ambient thermophilic ◆ heterotopic cytoplasm nucleus bacteriophage ◆ pathogenic cell wall/membrane spore facultative aerobic ◆ Flagella microaerophilic aerobic facultative anaerobic ◆ phagocytosis anaerobic Pili 5.17.7.1.2 Identify shapes and arrangements of bacteria; know growth curves 5.17.7.1.3 Apply techniques of staining procedures 5.17.7.1.4 Interpret/identify structures through microbiological slide preparations
	5.17.7.2 Bacteriology	5.17.7.2.1 List various methods of bacterial identification 5.17.7.2.2 Examine stained smears 5.17.7.2.3 Examine smears for acid-fast bacilli
	5.17.7.3 Media Quality Control, Techniques, and Cultures	5.17.7.3.1 Able to use additives used in media preparation 5.17.7.3.2 Ability to prepare bacterial smears and stains (Gram's, acid-fast, and other stains) 5.17.7.3.3 Recognize uses of bacterial culture methods: selective and differential media, enrichment procedures, anaerobic media and techniques, living host cells, candle jars 5.17.7.3.4 Prepare specimens and know rejection criteria 5.17.7.3.5 Ability to culture clinical specimens: blood, urine, stool (feces), sputum, throat, spinal fluid, upper respiratory, wound, abscess, other body fluids/ tissue specimens, urethral/cervical/ gynecological, catheter tip (intravenous), and intrauterine devices (IUD) 5.17.7.3.6 Ability to perform proper processing and planting of specimens 5.17.7.3.7 Ability to prepare and interpret gram stain 5.17.7.3.8 Interpret morphological characteristics 5.17.7.3.9 Isolate, identify, and differentiate microorganisms 5.17.7.3.10 Identify normal flora from cultures 5.17.7.3.11 Recognize pathogens from cultures



Domains	Sub domains	Indicators
		<p>5.17.7.3.12 Determine criteria for proper collection and rejection of specimens for the clinical microbiological laboratory</p> <p>5.17.7.3.13 Concentrate and culture sputum for acid-fast bacilli</p>

B Specific Medical Laboratory Assistants Competencies

Domains	Sub domains	Indicators
5.17.7 Microbiology	5.17.7.4 Bacterial Identification	<p>5.17.7.4.1 Identify various methods of bacterial identification</p> <p>5.17.7.4.2 Examine stained smears</p>
	5.17.7.5 Mycology & Viruses	<p>5.17.7.5.1 Identify types, descriptions, and classifications of mycological organisms</p> <p>5.17.7.5.2 Able to prepare clinical specimens for mycological studies (KOH and fungal cultures)</p> <p>5.17.7.5.3 Identify mycological organisms in clinical specimens</p> <p>5.17.7.5.4 Apply laboratory procedures for specimen submitted for diagnostic evaluation of viruses</p>
	5.17.7.6 Parasitology	<p>5.17.7.6.1 Identify types, descriptions, and classifications of parasites</p> <p>5.17.7.6.2 Prepare clinical specimens for parasitological studies</p> <p>5.17.7.6.3 Able to perform examination for parasites in clinical specimens</p> <p>5.17.7.6.4 Identify parasites in clinical specimens</p>
	5.17.8.1 General Knowledge	<p>5.17.8.1.1 Apply methods of specimen collection, handling, preservation, and processing for random, midstream, catheterized, and timed (2, 12, 24-hour) specimens</p> <p>5.17.8.1.2 Identify renal function; formation of urine; renal anatomy and physiology</p> <p>5.17.8.1.3 Recognize physical and chemical properties of urine</p>
5.17.8 Urine Analysis & Body Fluid	5.17.8.1 General Knowledge	<p>5.17.8.2.1 Able to perform physical examination of urine (color, clarity, specific gravity)</p>



Domains	Sub domains	Indicators
		<p>5.17.8.2.2 Able to perform chemical examination of urine: Chemical tests (pH, glucose, nitrate, urobilinogen, protein, ketones, bilirubin, blood, leukocyte esterase) Confirmatory tests (Clinitest®, Ictotest®, Acetest®, sulfosalicylic acid (SSA))</p> <p>5.17.8.2.3 Able to perform microscopic examination of urine; identify microscopic structures found in urine</p> <p>5.17.8.2.4 Correlate between complete urinalysis results with normal and disease states</p> <p>5.17.8.3.1 Apply manual testing (refractometer, myoglobin, glucose, bilirubin, acetone, stool and gastric secretions for occult blood)</p> <p>5.17.8.3.2 Able to measure body fluid counts and semen analyses</p>



فني المختبر ومساعد فني المختبر

قام ديوان الخدمة المدنية بتطوير الاطار العام لكفايات فني المختبر ومساعد فني المختبر لبناء امتحانات القبول لموظفي المختبرات في الخدمة المدنية , و توفير هذا الأطار كمرجع في القطاعات المدنية لبناء الوصف الوظيفي . و لتقييم الأداء المهني وبناء برامج التطوير المهني والمسارات المهنية.

الجهات المستهدفة من تطبيق الاطار العام لكفايات وظائف المختبرات :

فني مختبر :

الحاصل على درجة البكالوريوس في المختبرات الطبية / علوم طبية مخبرية /خاليل طبية /..... من برنامج تعليمي معترف به من مؤسسة تعليمية معترف بها ومرخص له بممارسة المهنة من قبل وزارة الصحة بموجب قانون الصحة العامة.

مساعد فني مختبر :

حاصل على دبلوم مختبرات طبية /علوم طبية مخبرية /خاليل طبية / من برنامج تعليمي معترف به من مؤسسة تعليمية معترف بها ومرخص له بممارسة المهنة من قبل وزارة الصحة بموجب قانون الصحة العامة.

منهجية تطوير الاطر المرجعية لكفايات فني المختبر ومساعد فني المختبر :

تم تطوير كفايات فني المختبر بناء على :

- الاوصاف الوظيفية لفني المختبر و مساعد فني المختبر في وزارة الصحة.
- افضل النماذج والاطر الدولية والاقليمية لكفاءات فني المختبر ومساعد فني المختبر ذات الصلة والتي لها تطبيقات محلية و عالمية مع الاطلاع على البرامج الاكاديمية.
- مجموعات النقاش المركزة من خبراء علم المختبرات في قطاعات الخدمة المدنية والشركاء من القطاعات الصحية الخاصة و الجامعات و النقابات.
- تغذية راجعة من قبل خبراء من وزارة الصحة
- الاعتماد من قبل وزارة الصحة .

بناء على ذلك تم بناء الاطار المرجعي لفني المختبر ومساعد فني المختبر للكفايات لتشمل الكفايات التالية :

الكفايات الصحية العامة : Generic Health Competencies (GHC)

هي الكفايات التي يتم مشاركتها مع جميع المهن الصحية التي تركز على توفير الرعاية القانونية و الأخلاقية الصحية العامة , وممارسات السلامة والجودة , والتواصل العلاجي مع المرضى والعمل بروح الفريق , والممارسة المستندة إلى افضل الادلة العلمية و المعلوماتية الصحية

التي تتضمن التالي :

- بيئة رعاية صحية آمنة وفعالة : Safe and Effective Health Care Environment
- مهارات الإتصال : Communication
- استخدام المعلومات الصحية : Utilize Health Information

الكفايات المهنية : Professional Competencies

الكفايات التي تعزز بيئة الرعاية المهنية والمنظمة لفني المختبر من خلال تعزيز المسؤوليات المهنية وإدارة رعاية المرضى بأمان والتي تتضمن التالي :

Professional Responsibility

- اخلاقيات المهنة Ethical Performance

Safety of practice and risk management الممارسة الآمنة وإدارة المخاطر

- (السيطرة على العدوى) Infection control
- (تقرير الحوادث) Reporting of Incidents
- (استجابات الطوارئ) Emergency response
- (جودة المختبر) Laboratory quality

Professional Laboratory Skills (مهارات المختبر المهنية)

- (معمل الاجهزة و الصيانة و مبادئ التشغيل) : Laboratory instrumentation, maintenance, and principles of operation
- (العمليات الحسابية في المختبر) Laboratory mathematics
- (المجهر) Microscopy
- (سحب الدم و جمع العينات) Phlebotomy and specimen collection
- (تعريف المريض) Patient Identification

كفايات الممارسة المتخصصة : Specific / Practice Competencies

هي الكفايات التقنية المطلوبة بشكل أكبر لدخول ممارسة مهنة المختبرات الذي يركز على اختبارات امراض الدم والكيمياء السريرية والمناعة و الانسجة والبكتيريا والفيروسات ومختلف سوائل الجسم والتي تتضمن التالي



Hematology (أمراض الدم)

- (الإجراءات المخبرية المتعلقة ب كريات الدم الحمراء) Erythrocytes procedures
- (الإجراءات المخبرية المتعلقة ب كريات الدم البيضاء) Leukocyte Procedures
- (الإجراءات المخبرية المتعلقة بالصفائح الدموية) Thrombocyte Procedures
- (سحب الدم و جمع العينات) Phlebotomy and specimen collection

Coagulation & Hemostasis (تجلط الدم و التخثر)

- (الإجراءات المتعلقة ب تجلط الدم) Coagulation Procedures

Immunohematology and Transfusion Services (علم الدم المناعي و نقل الدم)

- مبادئ وإجراءات اختبار التوافق Compatibility Testing Principles & Procedures
- (إجراءات بنك الدم) Blood banking practices
- (فصيلة الدم) Blood typing

Immunology (علم المناعة)

- (الاختبارات المصلية ل مرض الزهري) Serological Tests for Syphilis
- (الإجراءات التحليلية) Analytic Procedures

Clinical chemistry (الكيمياء السريرية)

- (المصطلحات و الاجهزة) Terminology and Instrumentation
- (اختبار وظائف الكلى) Renal function test
- (اختبارات الماء و الاملاح) Water and electrolytes
- (اختبارات وظائف الكبد) Hepatic function tests
- (الدهون) Lipids
- (علم الانزيمات) Enzymology
- (اختبارات الغدد الصماء) Endocrinology
- (التوازن الاحماض و القواعد) Acid –base balance
- (تحليل البروتين) Protein analysis
- (الاجراءات الكيميائية الاخرى) Other Chemistry Procedures

Histology & Techniques (التقنيات المستخدمة في اختبارات علم الانسجة)

- (إجراءات ما قبل التحليل) Pre Analytical
- (الإجراءات أثناء التحليل) Analytical
- (إجراءات ما بعد التحليل) Post Analytical

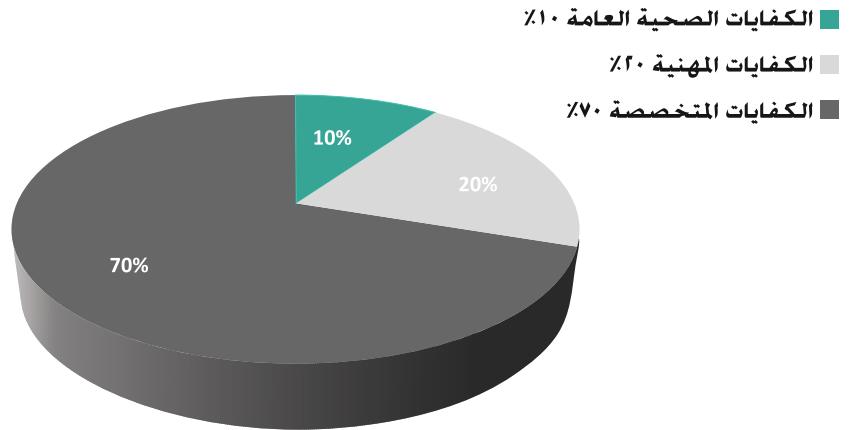
Microbiology (علم الاحياء الدقيقة المجهرى)

- (علم البكتيريا) Bacteriology
- (مراقبة جودة وسائط تكاثر الاحياء الدقيقة و تقنياتها و زراعتها) Media Quality Control, Techniques, and Cultures
- (تعريف و تحديد البكتيريا) Bacterial Identification
- (علم الطفيليات) Parasitology

Urine Analysis & Body Fluid (تحليل البول و سوائل الجسم)

- (إجراءات تحليل البول) Urinalysis Procedure
- (اختبارات خاصة) Special tests
- (تعريف و تحديد البكتيريا) Bacterial Identification
- (علم الطفيليات) Parasitology

النسب المئوية للكفايات المهنية و التخصصية لامتحانات فني المختبرات ومساعد فني المختبرات





لبناء امتحان يقيس القدرات والكفايات لمنلقي الرعاية الصحية تم إجراء ممارسة التحليل (practice analysis) الذي تم استخدامه لجمع البيانات حول الممارسة الحالية لفني الأشعة فقد تم بناء الاستبانة استنادا على الاطار العام للكفايات لتحديد الاحتياجات الحقيقية لواقع ممارسة المهنة في القطاع العام فتم تحديد النسب كالتالي :

