

**THE NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL EDUCATION AND
TRAINING**



OCCUPATIONAL STANDARDS

OCCUPATION: FOOD INSPECTION AND TESTING TECHNICIAN

LEVEL: NTA LEVEL 5

FEBRUARY 2024

TABLE OF CONTENTS

ABBREVIATIONS.....	ii
GLOSSARY OF TERMS.....	iii
1.0. INTRODUCTION.....	1
2.0. OCCUPATIONAL STANDARD DEVELOPMENT PROCESS.....	Error! Bookmark not defined.
3.0. THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR FOOD INSPECTION AND TESTING TECHNICIANS	2
4.0. VALIDITY PERIOD.....	3
5.0. OCCUPATIONAL STANDARDS	Error! Bookmark not defined.
5.1 OCCUPATIONAL STANDARDS FOR FOOD INSPECTION AND TESTING TECHNICIAN - NTA 5	4
TABLE 1: DACUM CHARTS FOR FOOD INSPECTION AND TESTING TECHNICIAN - NTA 5.....	32

ABBREVIATIONS

CBET	Competency Based Education and Training
ICMSF	International Commission on Microbiological Specializations for Foods
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
LIMS	Laboratory Information Management System
NACTVET	National Council for Technical and Vocational Education and Training
NOS	National Occupational Standards
OS	Occupational Standards
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
TBS	Tanzania Bureau of Standards
TFDA	Tanzania Food and Drugs Authority
TET	Technical Education and Training
TVET	Technical and Vocational Education and Training

GLOSSARY OF TERMS

Circumstantial Knowledge:	Detailed knowledge, which allows the decision-making in regard to different circumstances and cross cutting issues.
Competence:	The ability to use knowledge, understanding, practical, and thinking skills to perform effectively to the workplace standards required in employment.
Competency:	A description of the ability one possesses when able to perform a given occupational task effectively and efficiently.
Competency-based Education:	An instructional programme that derives its content from validated tasks and bases assessment on the learner's performance.
Curriculum:	A description or composite of statements about "what is to be learned" by the trainee/student in a particular instructional programme; a product that states the "intended learning outcomes".
Educational/Training Programme:	The complete curriculum and instruction (what and how) that is designed to prepare a person for employment in a job or other particular performance situation.
Occupation:	A specific position requiring the performance of specific tasks – essentially the same tasks are performed by all employees having the same title. (Example: baker)
Occupational Area:	This is a broad grouping of related jobs. (Example: food service)
Occupational Competence:	The application of knowledge and skills that consistently meet the standards required by the work context.
Occupational Standards:	Specific requirements of competences people are expected to demonstrate in a particular occupational area, including knowledge and relevant attitudes. They also act as a performance tool of assessment of the prescribed outcomes.
Occupational/Job Analysis:	A process used to identify the tasks that are important to employees in any given occupation.
Performance Criteria:	Indicate expected end results or outcomes in the form of evaluative statements.
Skills:	The ability to perform occupational tasks with a high degree of proficiency within a given occupation. Skill is conceived of as a composite of three completely interdependent components: cognitive, affective, and psychomotor.

Standards:	A set of statements, which if proved true under working conditions, means that an individual is meeting an expected level and type of performance.
Task Analysis:	The process of analysing each task to determine the steps, circumstantial knowledge, attitudes, performance standards, tools and materials needed, as well as safety concerns required for the employees performing it.
Task:	A work activity that has a definite beginning and ending, is observable or measurable, and consists of two or more definite steps that leads to a product, service, or decision.
Underpinning Knowledge:	Crucial knowledge that an individual must acquire in order to demonstrate competences that are associated in performing a given task.
Verification Process:	The process of having experts review and confirm the importance of the task (competency) statements identified through occupational analysis. Other questions, such as the degree of task learning difficulty are also frequently asked. This process is also sometimes referred to as validation.

1.0. INTRODUCTION

Technical Education and Training (TET) is one of the most important education sub-sectors in Tanzania, responsible for developing a skilled workforce to support the country's industrialization economic agenda. Tanzania's *Development Vision 2025* intends to raise the country's economy to a middle-income status, with a high level of human development. This requires a skilled workforce that is aligned with the needs of the public and private sectors of the economy. The National Council for Technical and Vocational Education and Training (NACTVET) has begun the job of drafting Occupational Standards (OS) that will eventually be adopted as National Occupational Standards (NOS) for use in the delivery of TET that meets the needs of the labour market and the country's economic agenda.

Occupational Standards (OS) are performance criteria that are matched with labour market demands. Each of them describes the functions, performance standards, and understanding or knowledge underpinning a given occupation. They combine skills, knowledge, and attitudes to describe best practice. They are useful tools for establishing job roles, personnel recruitment, supervision, and appraisal, as well as TET Standards. They are also helpful for benchmarking and harmonizing job qualifications on a national and international level. Standards, in general, provide a solid framework for high-quality TET that is labour market-relevant, current, and consistent in application across all public and private institutions.

However, it must be noted that Occupational Standards are different from Training /Education Standards. Occupational standards are defined in terms of activities performed by a person in a selected occupation (e.g., an electrical engineer designs electrical circuits, performs troubleshooting in electrical circuits, etc.), and are usually defined by Employers following procedures as agreed upon by all the stakeholders. On the other hand, Training and Education Standards are developed from the activities defined in the occupational standards, and they specify learning objectives to ensure that the necessary skills and knowledge are developed by a person to enable him/her to function at an agreed level in an occupation. Training and Education Standards are used to define curricula in training institutions. It is critical, however, to establish a direct link between the occupational standards and the training standards for both of them to respond collaboratively to the demands of the labour market.

For the purpose of TET delivery, Tanzania has adopted the Competence Based Education and Training (CBET) approach. The CBET approach focuses on providing learners with the skills and knowledge required to meet the occupational standards. Occupational standards are thus the starting point for developing competency-based training (CBET) programmes. Therefore, it is quite pertinent

for TET institutions to use the relevant occupational standards as a benchmark for formulating their curricula.

Occupational Standards are developed based on a given occupation's current and future demands. As a result, they serve as a means of bridging the gap between the worlds of employment and technical education and training.

The document explains how the occupational standards were developed, as well as the scope, the occupational profile in the form of DACUM charts, and the Occupational Standards.

2.0 OCCUPATIONAL STANDARD DEVELOPMENT PROCESS

The process of developing these Occupational Standards involved both local and international expertise. The process began with an examination of major documents that guide Tanzanian skills development including the *10-year National Skills Development Strategy (2016-2026)*. NACTVET labour market reports were also used in the literature review to determine the skills demand in the Tanzanian labour market as a whole.

After the literature review, a team of experts in consultation with practitioners developed draft occupational standards. The draft document was used to develop an occupational profile for each occupation (DACUM Chart), which is attached as an **Appendix** to every Occupational Standard.

The occupational standards were validated during the stakeholders' forum held on 22nd and 23rd February 2024 at Morogoro. The information from the stakeholders' forum provides insight from the workplace, professional bodies, regulatory bodies and sector ministries regarding trends and changes in the profession, including how well graduates are prepared for working in the occupation.

3.0. THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR FOOD INSPECTION AND TESTING TECHNICIANS

The standards cover a broad range of duties and tasks that can be performed by a Food Inspection and Testing Technician. However, the occupational standards are not meant to replace individual job descriptions. Instead, they are to be used for guidance in defining skill levels and knowledge for the technician in specific settings or positions. The Food Inspection and Testing Technician may perform tasks in a number of key areas of the occupational standards, but not necessarily in all areas. For example, in large operations, other individuals may be employed or designated to perform specific tasks.

Food Inspection and Testing Technicians shall conduct sampling, sample management, acceptance and inspection of glassware and reagent consumables and sample testing (routine physical and chemical testing, microbe detection, etc.), and perform the safety inspection of the laboratory under the supervision of engineers. They shall also complete the routine testing of food samples and the whole working procedure of sample collection, sample handling, testing, quality control and report

preparation in the laboratory. Generally, the Food Inspection and Testing Technician performs the following responsibilities:

- a) Sampling
- b) Sample management
- c) Inspection and acceptance of glassware and reagent consumables
- d) Routine physical and chemical testing
- e) Sampling and testing environment preparation
- f) Testing method selection
- g) Laboratory safety inspection

The Occupational Standards have been clustered into NTA qualification levels, i.e. NTA 4, 5 and 6.

4.0. VALIDITY PERIOD

Due to the rapid development of technology, the validity period of occupational standards is 3-5 years. The review will proceed in the same manner as the one before it, with new occupational standards being developed based on current trends of the labour market.

5.0. OCCUPATIONAL STANDARDS

5.1 OCCUPATIONAL STANDARDS FOR FOOD INSPECTION AND TESTING TECHNICIAN - NTA LEVEL 5

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	PERFORM SAMPLING	DUTY NO.	501
TASK TITLE	CARRY OUT SAMPLING	TASK NO.	5011
PERFORMANCE CRITERIA	The person performing this task must be able to conduct sampling according to standards and regulations, sampling plans and standard operation procedures for sampling.		
RANGE STATEMENT	The task can be performed under the supervision of senior food inspection and testing technicians or food inspection and testing engineers. The tools and equipment to be used include: 1. Relevant manuals of food safety sampling; 2. Relevant instructions of sampling; 3. Equipment for on-site food sampling, such as video recorders, mobile terminal devices and printers; 4. Vehicles for sample storage and transportation, equipment such as incubators, on-board refrigerators, and temperature recorders; 5. Special tools and containers for food sampling: sampling bottles, sterile sampling bags, scissors, sampling shovels, etc.; 6. Sample information registration forms, sample labels, marker pens, signature pens, notepads, etc.; 7. Personal protective equipment (masks, gloves, glasses, work clothes, etc.).		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Prepare sampling documents; 2. Select sampling tools; 3. Conduct sampling according to sampling plans; 4. Perform sterile sampling of microbiological inspection samples; 5. Check sampling quantity; 6. Standardize the filling in sampling records; 7. Review the sampling documents; 8. Standardize the sealing operation; 9. Confirm the paid sample fees; 10. Fill in the inspection form; 11. Pack and transport samples;		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Prepare sampling documents; 1.2 Prepare sampling tools; 1.3 Check the relevant qualifications of the sampled food producers and food business operators; 1.4 Conduct standardized sampling; 1.5 Standardize the filling in of sampling documents. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Sampling principles; 2.2 General rules of sampling;	

12. Ensure that the transport facilities meet sample transportation requirements; 13. Preserve sampling evidence.	2.3 The authenticity and integrity of sampling information; 2.4 Universality of information filling. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Sampling methods for food safety; 3.2 Commonly-used sampling tools and containers; 3.3 General procedures and steps of sampling. 4.0 Essential Skills 4.1 Communication skills; 4.2 Management skills; 4.3 Computer application skills; 4.4 Fast learning skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Sampling is conducted according to approved standards and regulations, sampling plans and standard operating procedures for sampling.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Laboratory safety operation; 2. Occupational safety and health.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	PERFORM SAMPLE MANAGEMENT	DUTY NO.	502
TASK TITLE	RECEIVE SAMPLE	TASK NO.	5021
PERFORMANCE CRITERIA	The person performing this task must be able to receive food samples according to the management standards for food samples.		
RANGE STATEMENT	The task can be performed in the food factory under the supervision of senior food inspection and testing technicians or food inspection and testing engineers. The tools and equipment to be used include: 1. Test tools; 2. Computers; 3. Documentation of standard operating procedures and manuals; 4. Equipment (refrigerators, sample cabinets, air conditioners, dehumidifiers, temperature and humidity monitors, etc.); 5. Personal Protective Equipment (PPE).		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Select suitable tools and materials; 2. Determine customer demands; 3. Fill in entrustment sheets; 4. Check the information of sampling sheets; 5. Check the completeness of samples, accessories and materials; 6. Confirm the name, quantity, status, etc. of samples; 7. Describe the samples; 8. Input sample information; 9. Comply with relevant management systems and health and safety precautions.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Perform sampling and sample receiving; 1.2 Entrust sample receiving; 1.3 Handle the abnormal situations of samples in the testing process. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Authenticity of sample information; 2.2 Completeness of sample data. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Sample receiving procedures; 3.2 Food sample properties; 3.3 Document management methods. 4.0 Essential Skills 4.1 Computer application skills; 4.2 Communication skills; 4.3 Problem spotting and problem solving skills;	

	4.4 Negotiation skills; 4.5 Teamwork skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Sample receiving is completed according to the management standards for food samples.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Laboratory safety operation; 2. Occupational safety and health.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	PERFORM SAMPLE MANAGEMENT	DUTY NO.	502
TASK TITLE	MANAGE SAMPLES	TASK NO.	5022
PERFORMANCE CRITERIA	The person performing this task must be able to manage food samples according to the management standards for food samples.		
RANGE STATEMENT	The task can be performed in the food factory under the supervision of senior food inspection and testing technicians or food inspection and testing engineers. The tools and equipment to be used include: 1. Test tools; 2. Computers; 3. Documentation of standard operating procedures and manuals; 4. Equipment (refrigerators, sample cabinets, air conditioners, dehumidifiers, temperature and humidity monitors, etc.); 5. Personal Protective Equipment (PPE).		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Prepare suitable tools and materials; 2. Check sample information; 3. Confirm sample identification; 4. Set food storage conditions; 5. Classify and store samples; 6. Keep, monitor and record food samples; 7. Perform sample transfer; 8. Check sample status and quantity; 9. Record sample status and quantity; 10. Determine the sample retention period; 11. Perform sample harmless treatment; 12. Record sample handling information; 13. Clean the working area, tools and equipment; 14. Comply with relevant management systems and health and safety precautions.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Identify and label samples; 1.2 Transfer and store samples for testing and preparation; 1.3 Perform sample delivery and transfer; 1.4 Manage samples for on-site inspection and testing; 1.5 Return and dispose of samples. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Principles of information authenticity; 2.2 Uniqueness principles of sample identification; 2.3 Traceability principles of samples; 2.4 Principles of harmless treatment. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Laboratory sample management; 3.2 Food sample properties; 3.3 Chemical changes of food;	

	3.4 Sample handling process; 3.5 Sorting methods; 3.6 Document management methods. 4.0 Essential Skills 4.1 Computer application skills; 4.2 Communication skills; 4.3 Management skills; 4.4 Equipment using skills; 4.5 Teamwork skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Sample management is completed according to the management standards for food samples.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Laboratory safety operation; 2. Occupational safety and health.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CARRY OUT ACCEPTANCE AND INSPECTION OF GLASSWARE AND REAGENT CONSUMABLES	DUTY NO.	503
TASK TITLE	CONDUCT ACCEPTANCE AND INSPECTION OF MEASURING INSTRUMENTS AND PERIOD VERIFICATION	TASK NO.	5031
PERFORMANCE CRITERIA	The person performing this task must be able to carry out the acceptance and inspection of measuring instruments and period verification according to food inspection projects.		
RANGE STATEMENT	The task can be performed in the food testing site under the instruction of senior food inspection and testing technicians or food inspection and testing engineers. The tools and equipment to be used include: 1. Documentation of standard operating procedures; 2. Procurement contracts for measuring instruments; 3. Manufacturer's manuals; 4. Personal Protective Equipment (PPE).		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Select suitable tools and materials; 2. Prepare the scheme for acceptance, inspection and period verification of measuring instruments; 3. Verify the verification certificates of measuring instruments; 4. Check the status of measuring instruments; 5. Conduct acceptance, inspection and period verification; 6. Fill in the acceptance, inspection and period verification records; 7. Submit the acceptance, inspection and period verification records; 8. Clean the working area, tools and equipment; 9. Comply with relevant management systems, health and safety precautions when performing tasks.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Verify the technical index of measuring instruments; 1.2 Conduct acceptance and inspection of measuring instruments; 1.3 Conduct period verification. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Principles for the acceptance and inspection of measuring instruments; 2.2 ISO17025. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Operation methods for the acceptance and inspection of measuring instruments; 3.2 Operation methods for period verification of measuring instruments;	

	3.3 Types, usage and requirements of commonly-used measuring instruments. 4.0 Essential Skills 4.1 Computer application skills; 4.2 Communication skills; 4.3 Equipment using skills; 4.4 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Acceptance, inspection, and period verification are conducted according to the management standards for measuring instruments.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Laboratory safety operation; 2. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CARRY OUT ACCEPTANCE AND INSPECTION OF GLASSWARE AND REAGENT CONSUMABLES	DUTY NO.	503
TASK TITLE	CONDUCT ACCEPTANCE AND INSPECTION OF CONVENTIONAL REAGENT CONSUMABLES	TASK NO.	5032
PERFORMANCE CRITERIA	The person performing this task must be able to conduct acceptance and inspection of conventional reagent consumables according to food inspection projects.		
RANGE STATEMENT	The task can be performed in the food testing site under the supervision of senior food inspection and testing technicians or food inspection and testing engineers. The tools and equipment to be used include: 1. Documentation of operating procedures; 2. Procurement lists or contracts for reagent consumables; 3. Manufacturer's manuals; 4. Personal Protective Equipment (PPE).		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Prepare the acceptance and inspection plan of glassware and reagent consumables; 2. Verify certificates; 3. Verify expiry dates; 4. Check the airtightness, completeness, etc. of glassware and reagent consumables; 5. Fill in the inspection and acceptance records; 6. Submit the inspection and acceptance records; 7. Clean the working area, tools and equipment; 8. Comply with relevant management systems and health and safety precautions.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Check the acceptance and inspection indicators of conventional reagents; 1.2 Conduct the acceptance and inspection of glassware and reagent consumables; 1.3 Deal with the incompliance with verification results. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Acceptance and inspection principles of glassware and reagent consumables; 2.2 ISO 17025. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Operation methods for the acceptance and inspection of conventional reagents;	

	3.2 Commonly-used reagents and requirements for physical and chemical inspection and testing of food; 3.3 Commonly-used reagents and requirements for microbiological inspection and testing of food. 4.0 Essential Skills 4.1 Computer application skills; 4.2 Communication skills 4.3 Equipment using skills; 4.4 Data processing and analysis skills; 4.5 Teamwork skills; 4.6 Safety protection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The acceptance and inspection of conventional reagent consumables are conducted according to project needs and inspection standards.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Occupational safety and health; 2. Laboratory safety operation.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	PERFORM ROUTINE PHYSICAL AND CHEMICAL TESTING OF FOOD	DUTY NO.	504
TASK TITLE	PREPARE AND CALIBRATE STANDARD SOLUTIONS	TASK NO.	5041
PERFORMANCE CRITERIA	The person performing this task must be able to prepare and calibrate standard solutions according to standard specifications or standard operation procedures, and provide standard titrating solutions for routine physical and chemical testing.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of senior food inspection and testing technicians or food inspection and testing engineers. The tools and equipment to be used include: 1. Standard specifications or standard operation procedures; 2. Analytical balances; 3. Constant temperature drying ovens; 4. Desiccators; 5. Burette; 6. Commonly-used glass instruments in the laboratory, such as measuring cylinders, beakers, conical bottles and glass rods; 7. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Select tools and equipment; 3. Select reagents and materials; 4. Prepare the solutions to be calibrated; 5. Weigh the treated standard substances; 6. Calibrate standard titrating solutions; 7. Conduct parallel tests; 8. Conduct blank tests; 9. Fill in the experimental records; 10. Dispose of waste; 11. Clean tools, equipment and workplaces; 12. Arrange and store the reagents, tools and equipment.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Prepare the solutions to be calibrated; 1.2 Perform the calibration of standard titrating solutions; 1.3 Determine the titration end point; 1.4 Dispose of waste. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Solution preparation principles; 2.2 Operation specifications for solution calibration; 2.3 Principles of the calibration of standard titrating solutions. 3.0 Theories	

	The person performing this task must be able to explain the following: 3.1 Methods for the calibration of standard titrating solutions; 3.2 Mechanisms for the color of titration end points. 4.0 Essential Skills 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Equipment application skills; 4.5 Problem finding and analyzing skills; 4.6 Fast learning skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Preparation and calibration of standard solutions are performed according to standard specifications or standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Laboratory safety operation; 2. Safety operation of instruments and equipment; 3. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	PERFORM ROUTINE PHYSICAL AND CHEMICAL TESTING OF FOOD	DUTY NO.	504
TASK TITLE	CONDUCT SIMPLE SAMPLE PRETREATMENT	TASK NO.	5042
PERFORMANCE CRITERIA	The person performing this task must be able to conduct simple sample pretreatment and provide sample solutions to be tested for routine physical and chemical testing according to standard specifications or standard operation procedures.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of senior food inspection and testing technicians or food inspection and testing engineers. The tools and equipment to be used include: 1. Standard specifications or standard operation procedures; 2. Oscillators; 3. Constant temperature drying ovens; 4. Homogenizers; 5. Pulverizers; 6. Tissue crushers; 7. High temperature furnaces; 8. Thermostat water baths; 9. Adjustable electric heating plates; 10. Adjustable electric furnaces; 11. Commonly-used glass instruments in the laboratory, such as pipets, volumetric flasks, measuring cylinders, beakers, conical bottles, funnels, evaporating dishes, surface dishes, crucibles, grinding bowls, azotification flasks, and glass rods; 12. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Select tools, equipment and safety gear; 3. Select reagents and materials; 4. Prepare uniform samples; 5. Select the appropriate methods (crushing, homogenization, grinding, etc.) to process the samples and obtain the solution to be tested; 6. Save the samples to be tested; 7. Fill in the experimental records;		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Prepare uniform samples; 1.2 Process samples; 1.3 Dispose of waste. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Principles of organic destruction; 2.2 Principles of solvent extraction;	

8. Dispose of waste; 9. Clean tools, equipment and workplaces; 10. Arrange and store the reagents, tools and equipment.	2.3 Principles of distillation; 2.4 Principles of precipitation separation; 2.5 Principles of sample pretreatment. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Operation specifications and applicable objects of organic destruction; 3.2 Operation specification and applicable objects of solvent extraction; 3.3 Operation specifications and applicable objects of distillation; 3.4 Operation specifications and applicable objects of precipitation separation. 4.0 Essential Skills 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Equipment application skills; 4.5 Problem finding and analysing skills; 4.6 Fast learning skills; 4.7 Safety protection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The simple sample pretreatment is performed in accordance with standard specifications or standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Laboratory safety operation; 2. Safety operation of instruments and equipment; 3. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	PERFORM ROUTINE PHYSICAL AND CHEMICAL TESTING OF FOOD	DUTY NO.	504
TASK TITLE	PERFORM PHYSICAL AND CHEMICAL TESTING OF FOOD	TASK NO.	5043
PERFORMANCE CRITERIA	The person performing this task must be able to select routine physical and chemical food testing equipment to test the routine physical and chemical indicators in food samples according to standard specifications or standard operation procedures to ensure food quality and safety.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of senior food inspection and testing technicians or food inspection and testing engineers. The tools and equipment to be used include: 1. Standard specifications; 2. Standard operation procedures; 3. Routine physical and chemical testing equipment (water activity meters, high temperature furnaces, densitometers, pycnometers, polarimeters, refractometers, turbidity meters, colorimeters, etc.); 4. Analytical balances; 5. Measuring instruments commonly-used in the laboratory, such as measuring cylinders, pipettes, burettes and thermometers; 6. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Select tools, equipment and safety gear; 3. Select reagents; 4. Prepare reagents and solutions; 5. Calibrate the testing instrument; 6. Determine the sample to be tested; 7. Conduct quality control tests; 8. Fill in the experimental records; 9. Calculate testing results; 10. Submit the testing result report; 11. Dispose waste; 12. Clean the tools, equipment and workplaces.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Identify the constant weight and the titration end point; 1.2 Calculate and analyse the result; 1.3 Dispose of waste. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The principle of gravimetry; 2.2 The principle of titration; 2.3 The principle of water activity testing; 2.4 The principle of physical indicator testing. 3.0 Theories	

	The person performing this task must be able to explain the following: 3.1 Basic theories of gravimetry testing; 3.2 Basic theories of titration testing; 3.3 Basic theories of water activity testing; 3.4 Basic theories of physical indicator testing. 4.0 Essential Skills 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Equipment use or standard operating skills; 4.5 Problem finding and analysing skills; 4.6 Data processing and analysis skills; 4.7 Fast learning skills; 4.8 Safety protection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The routine physical and chemical testing of food is performed according to standard specifications or standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Laboratory safety operation; 2. Safety operation of instruments and equipment; 3. Occupational health and safety; 4. Waste disposal methods.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CONDUCT SAMPLING AND PREPARING OF TESTING ENVIRONMENT	DUTY NO.	505
TASK TITLE	PERFORM ASEPTIC SAMPLING	TASK NO.	5051
PERFORMANCE CRITERIA	The person performing this task must be able to perform aseptic sampling of food samples without complete packaging or those requiring unpacking; achieve aseptic operation during sampling, and ensure that the sampling has no effect on the accuracy and fairness of subsequent food microbe detection, and will not cause secondary pollution of samples.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of senior food inspection and testing technicians or food inspection and testing engineers. The tools and equipment to be used include: 1. Aseptic protective gloves; 2. Aseptic bags or sterilization tanks; 3. Disinfection and sterilization containers; 4. Documentation of standard operating procedures or manuals.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Prepare suitable tools, equipment, safety gear and materials; 2. Develop aseptic sampling plans; 3. Clean and disinfect sampling equipment; 4. Perform aseptic sampling; 5. Mark the collected samples; 6. Store and transport collected samples; 7. Clean the working area; 8. Keep records properly for easy retrieval.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Determine the sampling plan; 1.2 Prepare sampling equipment; 1.3 Use high-pressure steam to sterilize and disinfect sampling equipment; 1.4 Perform sampling of various types of food; 1.5 Store and transport collected samples. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The principle of random sampling; 2.2 The principle of sample representativeness; 2.3 The principle of aseptic operation. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Elements for formulating aseptic sampling plans;	

	3.2 Aseptic sampling methods of various kinds of food; 3.3 Critical control points in the aseptic sampling process. 4.0 Essential Skills 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Computer application skills; 4.4 Safety protection skills; 4.5 Equipment using skills; 4.6 Fast learning skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Aseptic sampling of food samples is performed according to sampling requirements.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Safety operation knowledge of laboratory biosafety; 2. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	CONDUCT SAMPLING AND PREPARING OF TESTING ENVIRONMENT	DUTY NO.	505
TASK TITLE	PREPARE ASEPTIC ENVIRONMENT	TASK NO.	5052
PERFORMANCE CRITERIA	The person performing this task must be able to select a suitable aseptic environment according to the level of biosafety for experimenting and completing the effective monitoring and recording of the environment.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of senior food inspection and testing technicians. The tools and equipment to be used include: 1. Personal protective equipment; 2. Biosafety cabinets; 3. Clean benches; 4. Ultraviolet lamps; 5. Autoclaves; 6. Standard operation procedures.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Prepare suitable tools and materials; 2. Monitor the aseptic condition of air in the aseptic room and clean bench; 3. Perform sterilization; 4. Submit aseptic monitoring records; 5. Clean the working area; 6. Dispose waste; 7. Keep records for easy retrieval; 8. Observe relevant health and safety precautions.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Monitor air cleanliness; 1.2 Perform air sampling. 2.0 Principle The person performing this task must be able to explain the following principles: 2.1 The principle of aseptic operation; 2.2 International Microbiological Specializations for Foods; 2.3 ISO/IEC 17025. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Biosafety level requirements; 3.2 Requirements for sampling and testing environment; 3.3 Aseptic operation methods; 3.4 Air sample collection and testing methods.	

	4.0 Essential Skills 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Computer application skills; 4.4 Safety protection skills; 4.5 Equipment using skills; 4.6 Fast learning skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Aseptic and sterile environmental conditions are attained and maintained according to the approved standards for microbe detection.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Safety operation knowledge of laboratory biosafety; 2. Waste disposal methods; 3. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	ESTABLISH TESTING METHODS	DUTY NO.	506
TASK TITLE	DETERMINE APPROPRIATE METHODS OF FOOD TESTING AND ANALYSIS	TASK NO.	5061
PERFORMANCE CRITERIA	The person performing this task must be able to select appropriate methods of food testing and analysis according to customer demands and applicable scopes.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of senior food inspection and testing technicians. The tools and equipment to be used include: 1. Standard operating procedures; 2. Personal Protective Equipment (PPE).		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Determine customer demands and sample information; 2. Determine the testing items; 3. Determine the testing and analysis methods and applicable scopes; 4. Select appropriate methods of testing and analysis; 5. Record testing and analysis results; 6. Comply with relevant management systems and health and safety precautions; 7. Clean the working area, tools and equipment; 8. Arrange and store the tools and equipment; 9. Dispose of waste.		Detailed knowledge about: 8.6 Methods The person performing this task must be able to explain how to: 1.1 Determine the test items; 1.2 Recognize testing and analysis methods; 1.3 Determine the applicable scope of customer demands and testing and analysis methods; 1.4 Record testing and analysis methods. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The principle of the applicability of testing methods. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Principles of the operation of testing and analysis methods. 4.0 Essential Skills 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Literature retrieval skills; 4.4 Computer application skills; 4.5 Fast learning skills.	

DESCRIPTION OF THE END PRODUCT / SERVICE	Appropriate testing and analysis methods are selected according to customer demands and applicable scopes.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Laboratory safety operation; 2. Safety operation of instruments and equipment; 3. Occupational safety and health.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	ESTABLISH LABORATORY SAFETY	DUTY NO.	507
TASK TITLE	CARRY OUT LABORATORY SAFETY INSPECTION	TASK NO.	5071
PERFORMANCE CRITERIA	The person performing this task must be able to carry out laboratory safety inspection in accordance with standard operation procedures.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing supervisors. The tools and equipment to be used include: 1. Standard Operating Procedures; 2. Fire-fighting equipment; 3. Special instruments and equipment (biosafety equipment, autoclaves and centrifuges); 4. Personal protective equipment (goggles, gloves and work clothes).		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Institute laboratory safety guidelines 3. Regularly inspect and record the labeling, packaging and status of hazardous chemicals; 4. Regularly inspect and record fire-fighting equipment; 5. Inspect and record laboratory biosafety equipment; 6. Inspect and record the special instruments and equipment in the laboratory. 7. Provide PPEs		Detailed knowledge about: 8.6 Methods The person performing this task must be able to explain how to: 1.1 Interpret the laboratory safety management policy; 1.2 Use laboratory safety protection facilities normatively; 1.3 Manage hazardous chemicals; 1.4 Inspect laboratory biosafety equipment; 1.5 Inspect the special instruments and equipment in the laboratory. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The principle of laboratory safety management; 2.2 The principle of hazardous chemicals management; 2.3 The principle of biosafety management; 2.4 The principle of management of laboratory special instruments and equipment; 2.5 The laboratory safety management policy. 3.0 Theories The person performing this task must be able to explain the following:	

	3.1 Laboratory safety management measures. 4.0 Essential Skills 4.1 Computer application skills; 4.2 Communication skills; 4.3 Fast learning skills; 4.4 Skills of using instruments and equipment; 4.5 Teamwork skills; 4.6 Safety protection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Laboratory safety inspection is carried out in accordance with standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Laboratory safety operation; 2. Safety operation of instruments and equipment; 3. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	ESTABLISH LABORATORY SAFETY	DUTY NO.	507
TASK TITLE	CONDUCT SAFE HANDLING OF LABORATORY HAZARDOUS WASTE	TASK NO.	5072
PERFORMANCE CRITERIA	The person performing this task must be able to dispose of laboratory hazardous waste according to the disposal procedures for laboratory hazardous waste.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing supervisors. The tools and equipment to be used include: 1. Standard Operating Procedures; 2. Personal protective equipment (goggles, gloves and work clothes); 3. Hazardous waste containers; 4. Marker pens and the label paper; 5. Waste containers.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Collect laboratory waste; 3. Classify and collect laboratory hazardous waste; 4. Dispose of laboratory hazardous waste that can be handled; 5. Identify the laboratory hazardous waste that cannot be handled; 6. Label and record hazardous waste; 7. Store the laboratory hazardous waste that cannot be handled at designated locations; 8. Clean the tools, equipment and workplaces; 9. Store tools, equipment and safety gear.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Classify hazardous chemical waste; 1.2 Dispose of hazardous chemical waste; 1.3 Dispose of hazardous biological waste; 1.4 Dispose of hazardous physical waste. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The principle of laboratory safety management; 2.2 Specifications for the collection of laboratory waste chemicals; 2.3 The principle of hazardous chemicals safety management; 2.4 The principle of environmental management against pollution by waste hazardous chemicals. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Hazardous waste management regulations;	

	3.2 The harm of hazardous waste to human, animals, and environment; 3.3 Methods for classification, collection, storage and disposal of hazardous waste. 4.0 Essential Skills 4.1 Computer application skills; 4.2 Communication skills; 4.3 Fast learning skills; 4.4 Skills of using instruments and equipment; 4.5 Teamwork skills; 4.6 Safety protection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Laboratory hazardous waste is handled according to approved disposal procedures.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Laboratory safety operation; 2. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	ESTABLISH LABORATORY SAFETY	DUTY NO.	507
TASK TITLE	PERFORM ROUTINE LABORATORY MANAGEMENT	TASK NO.	5073
PERFORMANCE CRITERIA	The person performing this task must be able to carry out laboratory daily routine management according to laboratory daily routine management regulations.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing supervisors. The tools and equipment to be used include: 1. Standard operation procedures; 2. Inspection record tables; 3. Cameras.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Perform routine laboratory safety checks 3. Inspect and record the cleanliness and sanitation of the laboratory; 4. Inspect and record the placement of instruments, equipment and reagents; 5. List the non-compliances; 6. Fill in the record table of non-compliances; 7. Provide disposal measures.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Carry out laboratory sanitation and cleaning according to 8s management standards; 1.2 Store laboratory reagents and samples according to the 8S management standards; 1.3 Carry out laboratory inventory management according to the 8S management standards; 1.4 Manage laboratory records and documents according to the 8S management standards. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The principle of laboratory safety management; 2.2 The principle of laboratory daily routine management; 2.3 8S management principles. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Requirements for laboratory safety management; 3.2 Requirements for laboratory daily routine management;	

	3.3 Examination methods for instruments and equipment; 3.4 Precautions for actual placement. 4.0 Essential Skills 4.1 Computer application skills; 4.2 Communication skills; 4.3 Fast learning skills; 4.4 Skills of using instruments and equipment; 4.5 Teamwork skills; 4.6 Safety protection skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Routine Laboratory safety management is carried out according to approved laboratory regulations.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Environmental requirements for the testing area; 2. Occupational health and safety.

**APPENDIX 1: DACUM CHARTS FOR FOOD INSPECTION AND TESTING
TECHNICIAN - NTA LEVEL 5**

DUTIES	TASKS	ENABLERS
1.0 Perform sampling	1.1 Carry out sampling.	General skills and knowledge • Sampling procedures • Sampling and sample saving and transportation skills • Communication skills • Computer application skills • Equipment operation skills Tools and equipment • Equipment for on-site food sampling, such as video recorders, mobile terminal devices and printers • Vehicles for sample storage and transportation, equipment such as incubators, on-board refrigerators, and temperature recorders; • Sample information registration forms, sample labels, marker pens, signature pens, notepads, etc. • Manuals of food safety sampling • Standard operation procedures for sampling Materials • Sampling bags • Reagents • Personal protective equipment (masks, gloves, glasses, work clothes, etc.) Requirements for employees • Teamwork • Communication skills • Honesty and self-discipline • Honesty and trustworthiness • Meticulousness and adherence to norms
	2.1 Receive samples.	
2.0 Perform sample management	2.2 Manage samples.	General skills and knowledge • Communication skills • Computer application skills • Equipment operation skills • Document processing competence

DUTIES	TASKS	ENABLERS
		• Sample management knowledge and skills Tools and equipment • Computers and printers • Equipment such as refrigerators, freezers, sample cabinets and autoclaves • Food standard operation manuals • Sampling sheets • Testing entrustment contracts • Sample handling record tables Materials • Reagents • Cleaners • Personal protective equipment (masks, gloves, glasses, work clothes, etc.). Requirements for employees • Teamwork • Communication skills • Honesty and trustworthiness • Time management and sense of responsibility • Meticulousness and adherence to norms
3.0 Carry out acceptance and inspection of glassware and reagent consumables	3.1 Conduct acceptance and inspection of measuring instruments and period verification.	General skills and knowledge • Organizing competence • Communication skills • Document processing competence • Circumstantial knowledge of the property and storage of reagents and measuring instruments • Circumstantial knowledge of period verification Tools and equipment • Record tables • Stationeries • Standard operation procedures for testing and analysis methods Materials
	3.2 Conduct acceptance and inspection of reagent consumables.	

DUTIES	TASKS	ENABLERS
		• Reagent consumables • Measuring instruments • Glassware • Personal protective equipment (masks, gloves, glasses, work clothes, etc.). Requirements for employees • Teamwork • Communication skills • Trustworthiness • Time management and sense of responsibility • Meticulousness and adherence to norms
4.0 Perform routine physical and chemical testing of food	4.1 Prepare and calibrate standard solutions.	General skills and knowledge • Calibration of standard titrating solutions • Preparation of homogeneous samples to be processed • Physical and chemical testing skills • Data processing competence • Reasonable disposal of wastes Tools and equipment • Sample pretreatment equipment (analytical balances, thermostatic drying ovens, desiccators, oscillators, tissue crushers, thermostat water baths, etc.) • Routine physical and chemical testing equipment (water activity meters, high temperature furnaces, densitometers, pycnometers, polarimeters, refractometers, turbidity meters, colorimeters, etc.) • Commonly-used glass instruments in the laboratory, such as burets, pipets, volumetric flasks, measuring cylinders, beakers, conical bottles, funnels, evaporating dishes, surface dishes, crucibles, grinding bowls, azotification flasks, and glass rods;
	4.2 Conduct simple sample pretreatment.	
	4.3 Perform physical and chemical testing of food.	

DUTIES	TASKS	ENABLERS
		Materials • Samples to be tested • Reagents • Filter paper Requirements for employees • Teamwork • Communication skills • Dedication to work • Honesty and trustworthiness • Meticulousness and adherence to norms
5.0 Conduct sampling and preparing of testing environment	5.1 Perform aseptic sampling.	General skills and knowledge • Aseptic operation skills • Aseptic sampling and culture medium preparation skills • Equipment operation skills • Document processing competence • Communication skills Tools and equipment • Aseptic tools: Sterile cotton swabs, alcohol burners, scissors, tweezers, spoons, rubber bands, sealing tape, sterile saline solutions, test tubes, test tube racks, flat dishes, etc. • Aseptic equipment: Biosafety cabinets, clean benches, ultraviolet lamps, autoclaves, etc. • pH meters • Personal protective equipment (masks, gloves, glasses, work clothes, etc.) Materials • Peptones • Extracts • Agars • Reagents • Disinfectants • 75% alcohol cotton balls Requirements for employees • Teamwork
	5.2 Prepare aseptic environment.	

DUTIES	TASKS	ENABLERS
		• Communication skills • Dedication to work • Honesty and trustworthiness • Meticulousness and biosafety awareness
6.0 Establish testing methods	6.1 Determine appropriate methods of testing and analysis. (One task only!!)	General skills and knowledge • Organizing competence • Document processing competence • Computer application skills • Communication skills • Circumstantial knowledge of physical and chemical testing and microbe detection Tools and equipment • Record tables • Stationeries • Personal protective equipment (masks, gloves, glasses, work clothes, etc.). • Computers • Detection operation program documents Materials • Reagent consumables Requirements for employees • Teamwork • Communication skills • Trustworthiness • Time management and sense of responsibility • Meticulousness and adherence to norms
7.0 Establish laboratory safety	7.1 Carry out laboratory safety inspection.	General skills and knowledge • Communication skills • Operation skills • Teamwork skills • Circumstantial knowledge and skills of laboratory safety inspection • Requirements and methods for laboratory hazardous waste disposal
	7.2 Conduct safe handling of laboratory hazardous waste.	
	7.3 Perform routine laboratory management.	

DUTIES	TASKS	ENABLERS
		Tools and equipment • Personal protective equipment • Record tables • Fire-fighting equipment • Special instruments and equipment (biosafety equipment, autoclaves and centrifuges) • Hazardous waste containers • Cameras • Manuals of international standard organization (ISO) • Local authority environmental and food standard documents Materials • Reagents • Cleaners Requirements for employees • Teamwork and communication skills • Practice competence • Meticulousness • Adherence to norms