Qualification Pack

Microbiologist (Food)

QP Code: FIC/Q7603

Version: 4.0

NSQF Level: 5

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Qualification Pack

FIC/Q7603: Microbiologist (Food)

Brief Job Description

A Microbiologist (Food) is responsible for analyzing and monitoring the microbial quality of food products to ensure safety and compliance with regulatory standards. The individual conducts various microbiological tests, including advanced techniques such as Enzyme-Linked Immunosorbent Assay (ELISA) and Polymerase Chain Reaction (PCR), to detect both pathogenic and non-pathogenic organisms. The role involves designing and implementing food safety protocols, troubleshooting contamination issues, and collaborating with production and quality teams to improve hygiene practices and product quality.

Personal Attributes

The individual should have attention to detail, strong analytical, mathematical and problem-solving skills, and effective communication abilities. The person should be adaptable to new techniques and maintain high ethical standards to ensure compliance with food safety regulations. The individual should be able to plan, organize, and prioritize tasks.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. FIC/N7609: Prepare and maintain the work area and lab equipment
2. FIC/N7610: Carry out microbiological analysis of food products
3. FIC/N9907: Apply Food Safety and Hygiene in the laboratory
4. DGT/VSQ/N0102: Employability Skills (60 Hours)

Qualification Pack (QP) Parameters

Sector	Food Processing
Sub-Sector	Fruits and Vegetables, Food Grain Milling (Including oil seeds), Dairy Products, Meat and Poultry, Fish and Seafood, Bread and Bakery, Alcoholic Beverages, Aerated Water/Soft Drinks
Occupation	Quality Analysis/ Assurance
Country	India
NSQF Level	5

Qualification Pack

Credits	17
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3116.0200
Minimum Educational Qualification & Experience	Completed 2nd year of UG (UG Diploma) (in Food Science or Microbiology or Applied Science) with 3 Years of experience in Food Quality Testing or Quality Control OR Previous relevant Qualification of NSQF Level (4.5) with 3 Years of experience in Food Quality Testing or Quality Control OR Previous relevant Qualification of NSQF Level (4.0) with 4.5 years of experience in Food Quality Testing or Quality Control
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	21 Years
Last Reviewed On	NA
Next Review Date	18/02/2028
NSQC Approval Date	18/02/2025
Version	4.0
Reference code on NQR	QG-05-FI-03894-2025-V2-FICSI
NQR Version	2.0

Qualification Pack

FIC/N7609: Prepare and maintain the work area and lab equipment

Description

This unit focuses on the skills and knowledge required to prepare and maintain a clean, organized work area and laboratory equipment, ensuring optimal functionality and compliance with safety and hygiene standards in food processing and microbiological testing environments.

Scope

The scope covers the following :

- Prepare for microbiological testing
- Maintain the sample records
- Calibrate the maintain the lab equipment
- Maintain a clean and sterile lab environment

Elements and Performance Criteria

Prepare for microbiological testing

To be competent, the user/individual on the job must be able to:

PC1. ensure raw material, agar, broth, testing materials, chemicals, distilled water, glassware and other necessary tools for analysis (e.g., flasks, pipettes, autoclave, incubator, etc.), are available for microbiological testing

PC2. select the appropriate type of media based on the contaminants being tested

PC3. organize the workspace by arranging tools, materials, and samples in a systematic manner to avoid clutter

PC4. ensure all safety gear, such as gloves, goggles and lab coats are in usable condition

PC5. check that safety equipment, such as eyewash stations and fire extinguishers, is functional and accessible

PC6. prepare media culture, agar plates, sterile solutions and nutrient broth for analysis of food samples and store them appropriately

PC7. place the media culture or broth in the autoclave appropriately, following the standard procedures

PC8. set the appropriate autoclave parameters, such as temperature, duration, pressure, and water level, as per the requirement

PC9. monitor the sterilization process and turn off the autoclave after achieving the required pressure and temperature

PC10. release the pressure safely and remove sterilized items from the autoclave following the correct procedures

PC11. cool the sterilized items in a sterile area and store them following standard protocols

PC12. ensure reagents required for the test meet the applicable quality requirements

PC13. prepare food samples for testing in accordance with the organizational procedures

PC14. store samples as per their standard storage requirements

Maintain the sample records

To be competent, the user/individual on the job must be able to:

PC15. log samples information, including descriptions and comparison with specifications, as per the Standard Operating Procedure (SOP)

PC16. record and report any discrepancies in the samples to the relevant authority

PC17. ensure samples are traceable for reporting results

Calibrate and maintain the lab equipment

To be competent, the user/individual on the job must be able to:

PC18. check the laboratory equipment, such as incubators, microscopes and autoclaves, to ensure their proper functioning

PC19. carry out regular cleaning and maintenance of lab equipment to prevent cross-contamination

PC20. set up and calibrate lab equipment in accordance with the test method requirements

PC21. conduct routine inspections of the lab equipment to identify wear and tear or malfunctioning components

PC22. replace the faulty or unsafe components in the equipment or coordinate repairs with the equipment manufacturer

PC23. maintain a logbook to track maintenance schedules and repairs

Maintain a clean and sterile lab environment

To be competent, the user/individual on the job must be able to:

PC24. use appropriate Personal Protective Equipment (PPE) to ensure personal safety

PC25. clean and sanitize the lab using appropriate cleaning agents and sanitizers to maintain a hygienic lab environment

PC26. follow the recommended measures to minimize waste generation and environmental impacts

PC27. ensure safe collection and disposal of laboratory and hazardous waste

PC28. store lab equipment and reagents in the designated storage area

PC29. identify, document and report food safety and quality non-compliance issues according to SOP

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the purpose and principles of microbiological testing of food

KU2. the metrology techniques relevant to lab testing procedures, including possible errors or uncertainties in results

KU3. the effect of lab equipment settings on microbiological testing of food samples

KU4. the safety rules and environmental requirements applicable to working in lab environments

KU5. different culture media (e.g., agar, broth) and their selection based on the contaminants being tested, including preparation and storage protocols

KU6. the proper use of PPE, lab safety protocols, functionality checks for safety equipment (e.g., eyewash stations, fire extinguishers), and emergency procedures

KU7. the proper methods for preparing, storing, and handling food samples to prevent contamination, ensuring compliance with organizational and regulatory guidelines

KU8. the quality requirements for reagents, chemicals, and testing materials to ensure their suitability for microbiological analysis

KU9. the proper logging and documentation procedures, including sample descriptions, comparisons with specifications, and traceability in line with SOPs

KU10. the protocols for identifying and reporting sample discrepancies to relevant authorities, maintaining accuracy and integrity of sample records

KU11. the operation and maintenance of key lab equipment (e.g., incubators, microscopes, autoclaves), including calibration and regular inspections to ensure optimal performance

KU12. how to set appropriate autoclave parameters, i.e. temperature, pressure, and duration

KU13. the safety procedures for handling sterilized items

KU14. how to identify and rectify wear and tear or malfunctioning components in lab equipment, including coordination with manufacturers for repairs

KU15. the appropriate cleaning agents and sanitizers, as well as recommended practices for maintaining a hygienic and sterile lab environment to minimize cross-contamination

KU16. the safe disposal practices for laboratory and hazardous waste

KU17. the procedures for identifying, documenting, and reporting food safety and quality non-compliance issues

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. carefully check the availability and condition of materials, equipment, and safety gear before starting work to prevent errors

GS2. systematically arrange and organize tools, materials, and samples to maintain a clutter-free and efficient workspace

GS3. plan and manage time effectively to complete preparation, testing, and record-keeping tasks without delays

GS4. identify and resolve issues such as equipment malfunctions, discrepancies in sample records, or safety concerns

GS5. clearly document and report any discrepancies or issues related to samples, equipment, or safety to relevant authorities

GS6. follow the applicable SOPs and safety guidelines to ensure compliance and maintain lab safety

GS7. maintain accurate logs and records of sample information, equipment maintenance, and test results

GS8. ensure proper handling, calibration, and maintenance of lab equipment for reliable test results

GS9. adapt to changes in testing requirements or protocols and efficiently manage unexpected situations or equipment issues

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for microbiological testing	**15**	**28**	**-**	**10**
PC1. ensure raw material, agar, broth, testing materials, chemicals, distilled water, glassware and other necessary tools for analysis (e.g., flasks, pipettes, autoclave, incubator, etc.), are available for microbiological testing	1	2	-	0.5
PC2. select the appropriate type of media based on the contaminants being tested	1	2	-	0.5
PC3. organize the workspace by arranging tools, materials, and samples in a systematic manner to avoid clutter	1	2	-	0.5
PC4. ensure all safety gear, such as gloves, goggles and lab coats are in usable condition	1	2	-	0.5
PC5. check that safety equipment, such as eyewash stations and fire extinguishers, is functional and accessible	1	2	-	0.5
PC6. prepare media culture, agar plates, sterile solutions and nutrient broth for analysis of food samples and store them appropriately	1	2	-	0.5
PC7. place the media culture or broth in the autoclave appropriately, following the standard procedures	1	2	-	1
PC8. set the appropriate autoclave parameters, such as temperature, duration, pressure, and water level, as per the requirement	1	2	-	1
PC9. monitor the sterilization process and turn off the autoclave after achieving the required pressure and temperature	2	2	-	1
PC10. release the pressure safely and remove sterilized items from the autoclave following the correct procedures	1	2	-	1
PC11. cool the sterilized items in a sterile area and store them following standard protocols	1	2	-	0.5

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. ensure reagents required for the test meet the applicable quality requirements	1	2	-	0.5
PC13. prepare food samples for testing in accordance with the organizational procedures	1	2	-	1
PC14. store samples as per their standard storage requirements	1	2	-	1
Maintain the sample records	**3**	**4**	**-**	**2**
PC15. log samples information, including descriptions and comparison with specifications, as per the Standard Operating Procedure (SOP)	1	2	-	0.5
PC16. record and report any discrepancies in the samples to the relevant authority	1	1	-	0.5
PC17. ensure samples are traceable for reporting results	1	1	-	1
Calibrate and maintain the lab equipment	**6**	**9**	**-**	**4**
PC18. check the laboratory equipment, such as incubators, microscopes and autoclaves, to ensure their proper functioning	1	2	-	0.5
PC19. carry out regular cleaning and maintenance of lab equipment to prevent cross-contamination	1	1	-	0.5
PC20. set up and calibrate lab equipment in accordance with the test method requirements	1	2	-	0.5
PC21. conduct routine inspections of the lab equipment to identify wear and tear or malfunctioning components	1	1	-	0.5
PC22. replace the faulty or unsafe components in the equipment or coordinate repairs with the equipment manufacturer	1	2	-	1
PC23. maintain a logbook to track maintenance schedules and repairs	1	1	-	1
Maintain a clean and sterile lab environment	**6**	**9**	**-**	**4**
PC24. use appropriate Personal Protective Equipment (PPE) to ensure personal safety	1	1	-	0.5

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. clean and sanitize the lab using appropriate cleaning agents and sanitizers to maintain a hygienic lab environment	1	2	-	0.5
PC26. follow the recommended measures to minimize waste generation and environmental impacts	1	2	-	0.5
PC27. ensure safe collection and disposal of laboratory and hazardous waste	1	2	-	0.5
PC28. store lab equipment and reagents in the designated storage area	1	1	-	1
PC29. identify, document and report food safety and quality non-compliance issues according to SOP	1	1	-	1
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N7609
NOS Name	Prepare and maintain the work area and lab equipment
Sector	Food Processing
Sub-Sector	Fruits and Vegetables, Food Grain Milling, Dairy Products, Meat and Poultry, Fish and Sea Food, Bread and Bakery, Alcoholic Beverages, Aerated Water/Soft Drinks, Soya Food, Packaged Foods
Occupation	Quality Analysis/ Assurance
NSQF Level	5
Credits	7
Version	3.0
Last Reviewed Date	18/02/2025
Next Review Date	18/02/2028
NSQC Clearance Date	18/02/2025

FIC/N7610: Carry out microbiological analysis of food products

Description

This unit encompasses the procedures and techniques required to conduct microbiological analyses of food products, ensuring the accurate detection and quantification of microorganisms to assess food safety and quality in compliance with industry standards.

Scope

The scope covers the following :

- Perform swab checks for hygiene monitoring
- Process microbiological samples and perform microscopy
- Cultivate and isolate microorganisms
- Perform microbiological tests and interpret results
- Adhere to laboratory safety and quality standards
- Perform advanced microbiological tests and interpret results
- Apply appropriate techniques to cultivate and isolate microorganisms

Elements and Performance Criteria

Perform swab checks for hygiene monitoring

To be competent, the user/individual on the job must be able to:

PC1. use sterile swabs and equipment to collect samples from designated areas, such as hands, air, and equipment, according to standard procedures

PC2. transfer swabs into test tubes containing sterile buffered peptone water or appropriate diluent without contamination

PC3. ensure that the sample collection is conducted under appropriate lighting and environmental conditions

PC4. shake the test tube gently and allow it to stand as per specified protocols to release microorganisms into the solution

PC5. remove the swab and analyze the sample as per laboratory specifications and standard operating procedures (SOPs)

Process microbiological samples and perform microscopy

To be competent, the user/individual on the job must be able to:

PC6. apply correct disinfection procedures to work areas before and after handling samples to prevent cross-contamination

PC7. prepare and stain thin smears and liquid films of samples for microscopic examination

PC8. set up and calibrate microscopes, ensuring proper magnification and resolution for accurate observation of microorganisms

PC9. examine dry, wet, and stained specimens to identify microbial structures and characteristics

PC10. maintain, clean, and store microscopes and related equipment as per standard protocols

Cultivate and isolate microorganisms

To be competent, the user/individual on the job must be able to:

PC11. prepare and use culture media, agar plates, and broth as per laboratory requirements

PC12. apply aseptic techniques to streak samples on agar plates to isolate single colonies of microorganisms

PC13. select appropriate incubation conditions, such as temperature and gaseous environment, to support the growth of specific microorganisms

PC14. perform serial dilutions of samples accurately to determine microbial load

PC15. monitor and record bacterial growth, estimating colony-forming units (CFU) as required by testing protocols

Perform microbiological tests and interpret results

To be competent, the user/individual on the job must be able to:

PC16. conduct biochemical and serological tests on pure cultures to identify specific microorganisms

PC17. conduct TPC tests to quantify total microbial load, ensuring accurate plating and incubation for total microbial load determination

PC18. conduct yeast and mould tests, ensuring the use of selective media and incubation conditions appropriate for fungal growth detection

PC19. interpret the results of yeast and mould tests in line with standard limits for acceptable fungal contamination

PC20. prepare enrichment media for salmonella testing

PC21. conduct salmonella detection using biochemical or serological methods as per laboratory protocols for proper detection and identification

PC22. prepare and use stained slides to observe morphological features of bacteria and other microbes

PC23. compare test results with standard parameters and critical limits, identifying any deviations or anomalies

PC24. document and communicate test results and deviations to the relevant authorities as per organizational procedures

Perform advanced microbiological tests and interpret results

To be competent, the user/individual on the job must be able to:

PC25. perform Enzyme-Linked Immunosorbent Assay (ELISA) to detect specific antigens or antibodies in food samples, ensuring accuracy and compliance with test protocols

PC26. conduct Polymerase Chain Reaction (PCR) for the detection and identification of DNA from pathogenic and non-pathogenic organisms in food samples

PC27. use Real-Time PCR (qPCR) for quantitative analysis of microbial load in food products

PC28. validate test results by comparing with standard controls and report any deviations

PC29. differentiate between pathogens (e.g., Salmonella, E. coli) and non-pathogens (e.g., Lactobacillus) using biochemical and molecular techniques

PC30. document and report test findings, including interpretations and implications for food safety

Apply appropriate techniques to cultivate and isolate microorganisms

To be competent, the user/individual on the job must be able to:

PC31. select appropriate media and incubation conditions for culturing both pathogenic and non-pathogenic microorganisms

PC32. implement selective and differential media for distinguishing between microbial groups

PC33. perform colony counting and morphological identification of cultured pathogens and non-pathogens

Adhere to laboratory safety and quality standards

To be competent, the user/individual on the job must be able to:

PC34. follow laboratory safety guidelines, using personal protective equipment (PPE) and biosafety protocols

PC35. implement quality control measures to ensure the accuracy and precision of microbiological test results

PC36. record and report all test data in compliance with laboratory quality management systems

PC37. dispose of samples, media, and biohazardous waste according to established safety procedures

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the physiological characteristics of animal, plant, and microbial cells, including cell structure and function

KU2. the basic microbiological terminology, including terms related to microbial morphology, physiology, and taxonomy

KU3. the purpose and use of peptone water as a diluent and enrichment medium for the recovery of microorganisms

KU4. the importance of collecting swabs for monitoring hygiene and detecting microbial contamination in different areas such as surfaces, air, and equipment

KU5. microbial diversity, including different types of bacteria, fungi, and viruses relevant to food production and spoilage

KU6. the use of Personal Protective Equipment (PPE), such as gloves, lab coats, and masks, and biological safety cabinets to ensure laboratory safety

KU7. the principles and methods of disinfection and sterilization, including autoclaving, chemical sterilization, and UV sterilization, applied to prevent contamination

KU8. the chemical and physical methods available for controlling microbial growth, including the use of preservatives, heat treatment, and pH adjustments

KU9. the advantages and limitations of different methods for sterilization or control of specific microorganisms

KU10. the techniques for cultivating and isolating microorganisms using different media and environmental conditions, such as aerobic and anaerobic setups

KU11. the purpose of sample dilution in preparing materials for microbial enumeration and pure culture work

KU12. the identification of common types of bacteria, including pathogenic and spoilage microorganisms, using biochemical and molecular methods

KU13. the application of microscopy for observing morphological characteristics of microbial cells in different states, such as wet mounts and stained preparations

KU14. the microorganisms significant in food production and spoilage, including their growth patterns and survival under various conditions

KU15. the principles and practices of quality assurance procedures commonly used in food testing laboratories to ensure reliable results

KU16. food regulatory frameworks such as FSSAI, Codex Alimentarius, and food standards relevant to the organizational's products

KU17. the importance of adhering to health, safety, and environmental requirements in the microbiology lab to minimize risks and ensure safe handling of bio-hazardous materials

KU18. the principles and procedures of ELISA, including types (e.g., direct, indirect, sandwich) and applications in food safety testing

KU19. the fundamentals of PCR and qPCR, including sample preparation, amplification cycles, and data interpretation

KU20. common pathogens (e.g., Listeria, Campylobacter) and non-pathogens (e.g., beneficial probiotics) relevant to food safety and quality

KU21. the criteria for selecting appropriate controls and standards for ELISA and PCR assays

KU22. the regulatory standards for microbial limits in food products as per FSSAI and international guidelines

KU23. the types of selective and differential media used for isolating and identifying specific groups of micro-organisms

KU24. the microbial ecology and factors influencing the growth of pathogens and non-pathogens in various food matrices

KU25. the methods for maintaining pure cultures and preventing cross-contamination during isolation and identification processes

KU26. the principles of the TPC method, including sample preparation, serial dilution, and plating techniques to determine total microbial load in food products

KU27. the significance and procedures for yeast and mould tests, including the use of selective media and appropriate incubation conditions to assess fungal contamination in food products

KU28. the importance of salmonella detection in food safety, including the use of enrichment media, selective plating, and biochemical or serological methods for identification

KU29. the interpretation of TPC, yeast and mould, and salmonella test results, including the comparison of microbial counts against regulatory standards for acceptable contamination levels

KU30. the factors influencing microbial growth, including moisture, temperature, pH, and oxygen levels, specifically as they relate to the TPC, yeast and mould, and salmonella tests

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. perform tasks with precision and accuracy, ensuring that sample collection, testing, and data recording are conducted without errors

GS2. interpret complex data, identifying patterns, and drawing meaningful conclusions from microbiological test results

GS3. convey complex scientific information clearly and concisely, both in written reports and verbal presentations

GS4. prioritize tasks, manage workload efficiently, and meet deadlines in a dynamic laboratory environment

GS5. troubleshoot issues in experimental procedures, equipment malfunctions, or unexpected results

GS6. develop effective solutions

GS7. work effectively with colleagues and other departments, sharing knowledge, and contributing to a productive team environment

GS8. respond to changing priorities, new methodologies, and evolving industry standards in microbiological analysis and food safety

GS9. evaluate information critically, assess the validity of data, and make informed decisions regarding laboratory processes and outcomes

GS10. organize and maintain laboratory records, samples, and equipment systematically to ensure efficiency and compliance with standards

GS11. follow the latest advancements in microbiology, food safety, and laboratory techniques, and to apply new knowledge to improve work performance

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Perform swab checks for hygiene monitoring	**4**	**7**	**-**	**2.5**
PC1. use sterile swabs and equipment to collect samples from designated areas, such as hands, air, and equipment, according to standard procedures	0.5	1	-	0.5
PC2. transfer swabs into test tubes containing sterile buffered peptone water or appropriate diluent without contamination	0.5	2	-	0.5
PC3. ensure that the sample collection is conducted under appropriate lighting and environmental conditions	1	1	-	0.5
PC4. shake the test tube gently and allow it to stand as per specified protocols to release microorganisms into the solution	1	1	-	0.5
PC5. remove the swab and analyze the sample as per laboratory specifications and standard operating procedures (SOPs)	1	2	-	0.5
Process microbiological samples and perform microscopy	**4**	**7**	**-**	**3**
PC6. apply correct disinfection procedures to work areas before and after handling samples to prevent cross-contamination	0.5	1	-	0.5
PC7. prepare and stain thin smears and liquid films of samples for microscopic examination	1	2	-	0.5
PC8. set up and calibrate microscopes, ensuring proper magnification and resolution for accurate observation of microorganisms	1	1	-	0.5
PC9. examine dry, wet, and stained specimens to identify microbial structures and characteristics	1	1	-	0.5
PC10. maintain, clean, and store microscopes and related equipment as per standard protocols	0.5	2	-	1
Cultivate and isolate microorganisms	**4**	**7**	**-**	**3**
PC11. prepare and use culture media, agar plates, and broth as per laboratory requirements	1	2	-	0.5

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. apply aseptic techniques to streak samples on agar plates to isolate single colonies of microorganisms	1	2	-	0.5
PC13. select appropriate incubation conditions, such as temperature and gaseous environment, to support the growth of specific microorganisms	1	1	-	0.5
PC14. perform serial dilutions of samples accurately to determine microbial load	0.5	1	-	0.5
PC15. monitor and record bacterial growth, estimating colony-forming units (CFU) as required by testing protocols	0.5	1	-	1
Perform microbiological tests and interpret results	**9**	**11**	**-**	**5**
PC16. conduct biochemical and serological tests on pure cultures to identify specific microorganisms	1	1	-	0.5
PC17. conduct TPC tests to quantify total microbial load, ensuring accurate plating and incubation for total microbial load determination	1	2	-	1
PC18. conduct yeast and mould tests, ensuring the use of selective media and incubation conditions appropriate for fungal growth detection	1	2	-	0.5
PC19. interpret the results of yeast and mould tests in line with standard limits for acceptable fungal contamination	1	1	-	0.5
PC20. prepare enrichment media for salmonella testing	1	1	-	0.5
PC21. conduct salmonella detection using biochemical or serological methods as per laboratory protocols for proper detection and identification	1	1	-	0.5
PC22. prepare and use stained slides to observe morphological features of bacteria and other microbes	1	1	-	0.5
PC23. compare test results with standard parameters and critical limits, identifying any deviations or anomalies	1	1	-	0.5

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. document and communicate test results and deviations to the relevant authorities as per organizational procedures	1	1	-	0.5
Perform advanced microbiological tests and interpret results	**5**	**9**	**-**	**3**
PC25. perform Enzyme-Linked Immunosorbent Assay (ELISA) to detect specific antigens or antibodies in food samples, ensuring accuracy and compliance with test protocols	0.5	1.5	-	0.5
PC26. conduct Polymerase Chain Reaction (PCR) for the detection and identification of DNA from pathogenic and non-pathogenic organisms in food samples	1	1.5	-	0.5
PC27. use Real-Time PCR (qPCR) for quantitative analysis of microbial load in food products	1	1.5	-	0.5
PC28. validate test results by comparing with standard controls and report any deviations	1	1.5	-	0.5
PC29. differentiate between pathogens (e.g., Salmonella, E. coli) and non-pathogens (e.g., Lactobacillus) using biochemical and molecular techniques	0.5	1.5	-	0.5
PC30. document and report test findings, including interpretations and implications for food safety	1	1.5	-	0.5
Apply appropriate techniques to cultivate and isolate microorganisms	**2**	**4**	**-**	**1.5**
PC31. select appropriate media and incubation conditions for culturing both pathogenic and non-pathogenic microorganisms	0.5	2	-	0.5
PC32. implement selective and differential media for distinguishing between microbial groups	1	1	-	0.5
PC33. perform colony counting and morphological identification of cultured pathogens and non-pathogens	0.5	1	-	0.5
Adhere to laboratory safety and quality standards	**2**	**5**	**-**	**2**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC34. follow laboratory safety guidelines, using personal protective equipment (PPE) and biosafety protocols	0.5	2	-	0.5
PC35. implement quality control measures to ensure the accuracy and precision of microbiological test results	0.5	1	-	0.5
PC36. record and report all test data in compliance with laboratory quality management systems	0.5	1	-	0.5
PC37. dispose of samples, media, and biohazardous waste according to established safety procedures	0.5	1	-	0.5
NOS Total	**30**	**50**	**-**	**20**

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N7610
NOS Name	Carry out microbiological analysis of food products
Sector	Food Processing
Sub-Sector	Fruits and Vegetables, Food Grain Milling, Dairy Products, Meat and Poultry, Fish and Sea Food, Bread and Bakery, Alcoholic Beverages, Aerated Water/Soft Drinks, Soya Food, Packaged Foods
Occupation	Quality Analysis/ Assurance
NSQF Level	5
Credits	7
Version	3.0
Last Reviewed Date	18/02/2025
Next Review Date	18/02/2028
NSQC Clearance Date	18/02/2025

FIC/N9907: Apply Food Safety and Hygiene in the laboratory

Description

The unit focuses on the knowledge and skills required to maintain a safe and hygienic food testing laboratory environment.

Scope

The scope covers the following :

- Apply & practices to maintain food safety and hygiene in the laboratory

Elements and Performance Criteria

Implement practices to maintain food safety and hygiene in laboratory

To be competent, the user/individual on the job must be able to:

PC1. Ensure timely medical examination of foodborne illness by a medical practitioner.

PC2. Read the latest updates for food safety regulations and standards with respect to products, packaging, and labelling

PC3. identify and control potential food safety hazards within the lab

PC4. ensure Material Safety Data Sheet(MSDS) are readily available and accessible in the lab for all the personnel

PC5. Categorize and store chemicals according to their compatibility and hazard class as per the MSDS

PC6. • follow proper procedures for the collection, labeling, and storage of biological samples to prevent
• contamination and degradation.

PC7. segregate waste according to type (biological, chemical, sharps, general) and dispose of it in designated, labeled bins.

PC8. Implement control measures to avoid cross-contamination of food samples.

PC9. Implement good hygiene and sanitation practices within the lab

PC10. Follow good storage practices as per organizational standards and maintain control parameters such as temperature and humidity

PC11. apply Good Laboratory Practices (GLP) to ensure high-quality and reliable lab results

PC12. implement and maintain food safety protocols

PC13. implement practices to control food allergens and their management

PC14. • troubleshoot minor issues with equipment that arise during operation and report any major malfunctions to
• the Manager immediately

PC15. participate in lab audits and ensure the mandatory record keeping and documentation

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Understanding of HACCP (Hazard Analysis and Critical Control Points)
KU2. Understand foodborne illness and their causes
KU3. understand the latest updates for food safety regulations and standards for products, packaging, and labelling
KU4. understand the purpose and scope of NABL accreditation and its impact on laboratory operations
KU5. understand and comply with NABL (National Accreditation Board for Testing and Calibration Laboratories) guidelines and regulations.
KU6. understand the importance of MSDS while categorizing and storing chemicals in the food testing labs
KU7. understand Good Laboratory Practices (GLP) to ensure high-quality and reliable lab results
KU8. understand the FSSAI guidelines and standards applicable to food testing laboratories.
KU9. Familiarity with food safety regulations and standards, food packaging, and food labeling.
KU10. Ability to identify and control potential food safety hazards
KU11. Good hygiene and sanitation practices
KU12. Knowledge of food packaging and storage techniques
KU13. Knowledge of food safety protocols
KU14. awareness about food allergens and their management techniques
KU15. procedure to conduct food safety audits and importance of standards relevant to lab audits

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. use common sense and make judgments on day to day basis
GS2. use reasoning skills to identify and resolve basic problems
GS3. use intuition to detect any potential problems which could arise during operations
GS4. use acquired knowledge of the process for identifying and handling issues

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Implement practices to maintain food safety and hygiene in laboratory	**17**	**18**	**-**	**15**
PC1. Ensure timely medical examination of foodborne illness by a medical practitioner.	1	1	-	1
PC2. Read the latest updates for food safety regulations and standards with respect to products, packaging, and labelling	2	1	-	1
PC3. identify and control potential food safety hazards within the lab	1	1	-	1
PC4. ensure Material Safety Data Sheet(MSDS) are readily available and accessible in the lab for all the personnel	1	1	-	1
PC5. Categorize and store chemicals according to their compatibility and hazard class as per the MSDS	1	1	-	1
PC6. • follow proper procedures for the collection, labeling, and storage of biological samples to prevent • contamination and degradation.	1	1	-	1
PC7. segregate waste according to type (biological, chemical, sharps, general) and dispose of it in designated, labeled bins.	1	2	-	1
PC8. Implement control measures to avoid cross-contamination of food samples.	1	1	-	1
PC9. Implement good hygiene and sanitation practices within the lab	1	1	-	1
PC10. Follow good storage practices as per organizational standards and maintain control parameters such as temperature and humidity	1	2	-	1
PC11. apply Good Laboratory Practices (GLP) to ensure high-quality and reliable lab results	1	1	-	1
PC12. implement and maintain food safety protocols	2	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. implement practices to control food allergens and their management	1	1	-	1
PC14. • troubleshoot minor issues with equipment that arise during operation and report any major malfunctions to • the Manager immediately	1	1	-	1
PC15. participate in lab audits and ensure the mandatory record keeping and documentation	1	1	-	1
NOS Total	**17**	**18**	**-**	**15**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N9907
NOS Name	Apply Food Safety and Hygiene in the laboratory
Sector	Food Processing
Sub-Sector	Fruits and Vegetables, Food Grain Milling (Including oil seeds), Dairy Products, Meat and Poultry, Fish and Seafood, Bread and Bakery, Alcoholic Beverages, Aerated Water/Soft Drinks
Occupation	Generic
NSQF Level	3.5
Credits	1
Version	2.0
Last Reviewed Date	18/02/2025
Next Review Date	18/02/2028
NSQC Clearance Date	18/02/2025

DGT/VSQ/N0102: Employability Skills (60 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

PC1. identify employability skills required for jobs in various industries

PC2. identify and explore learning and employability portals

Constitutional values – Citizenship

To be competent, the user/individual on the job must be able to:

PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.

PC4. follow environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

PC5. recognize the significance of 21st Century Skills for employment

PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

Basic English Skills

To be competent, the user/individual on the job must be able to:

PC7. use basic English for everyday conversation in different contexts, in person and over the telephone

PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English

PC9. write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

To be competent, the user/individual on the job must be able to:

PC10. understand the difference between job and career

PC11. prepare a career development plan with short- and long-term goals, based on aptitude

Communication Skills

To be competent, the user/individual on the job must be able to:

PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings

PC13. work collaboratively with others in a team

Diversity & Inclusion

To be competent, the user/individual on the job must be able to:

PC14. communicate and behave appropriately with all genders and PwD

PC15. escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

PC16. select financial institutions, products and services as per requirement

PC17. carry out offline and online financial transactions, safely and securely

PC18. identify common components of salary and compute income, expenses, taxes, investments etc

PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

PC20. operate digital devices and carry out basic internet operations securely and safely

PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively

PC22. use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

To be competent, the user/individual on the job must be able to:

PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research

PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion

PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

To be competent, the user/individual on the job must be able to:

PC26. identify different types of customers

PC27. identify and respond to customer requests and needs in a professional manner.

PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

PC29. create a professional Curriculum vitae (Résumé)

PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC31. apply to identified job openings using offline /online methods as per requirement

PC32. answer questions politely, with clarity and confidence, during recruitment and selection

PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU6. importance of career development and setting long- and short-term goals

KU7. about effective communication

KU8. POSH Act

KU9. Gender sensitivity and inclusivity

KU10. different types of financial institutes, products, and services

KU11. how to compute income and expenditure

KU12. importance of maintaining safety and security in offline and online financial transactions

KU13. different legal rights and laws

KU14. different types of digital devices and the procedure to operate them safely and securely

KU15. how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

KU16. how to identify business opportunities

KU17. types and needs of customers

KU18. how to apply for a job and prepare for an interview

KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read and write different types of documents/instructions/correspondence

GS2. communicate effectively using appropriate language in formal and informal settings

GS3. behave politely and appropriately with all
GS4. how to work in a virtual mode
GS5. perform calculations efficiently
GS6. solve problems effectively
GS7. pay attention to details
GS8. manage time efficiently
GS9. maintain hygiene and sanitization to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
Constitutional values – Citizenship	**1**	**1**	**-**	**-**
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**2**	**4**	**-**	**-**
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
Career Development & Goal Setting	**1**	**2**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
Communication Skills	**2**	**2**	**-**	**-**
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**2**	**-**	**-**
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
Financial and Legal Literacy	**2**	**3**	**-**	**-**
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	**3**	**4**	**-**	**-**
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Entrepreneurship	**2**	**3**	**-**	**-**
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
Customer Service	**1**	**2**	**-**	**-**
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**2**	**3**	**-**	**-**
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	06/05/2028
NSQC Clearance Date	08/05/2025

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.

2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.

3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criterion.

6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.

7. In case of unsuccessful completion, the trainee may seek reassessment on the

Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
FIC/N7609.Prepare and maintain the work area and lab equipment	30	50	-	20	100	35
FIC/N7610.Carry out microbiological analysis of food products	30	50	-	20	100	35
FIC/N9907.Apply Food Safety and Hygiene in the laboratory	17	18	-	15	50	20
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	10
Total	**97**	**148**	**-**	**55**	**300**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifcations Framework
OJT	On-the-Job Training
ES	Employability Skills
NCVET	National Council for Vocational Education and Training
FICSI	Food Safety and Standards Authority of India
PPE	Personal Protective Equipment
CFU	Colony-Forming Units
PCR	Polymerase Chain Reaction
qPCR	Real-Time PCR
ELISA	Enzyme-Linked Immunosorbent Assay
DNA	Deoxyribonucleic Acid
GMP	Manufacturing Practices
GHP	Good Hygiene Practices
HACCP	Hazard Analysis Critical Control Points

VACCP	Vulnerability Assessment Critical Control Points
TACCP	Threat Assessment Critical Control Points
ISO	International Organization for Standardization
CIP	Clean-in-Place
COP	Clean-out-of-Place
CPR	Cardiopulmonary Resuscitation
FEFO	First Expiry, First Out
FIFO	First In, First Out
RCA	Root Cause Analysis
CAPA	Corrective and Preventive Action
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifcations Framework
OJT	On-the-Job Training
AA	Assessment Agency
AB	Awarding Body
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register

NSQF	National Skills Qualifcations Framework
OJT	On-the-Job Training

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.
Term National Occupational Sta	NOS defines the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualifications	A formal outcome of an assessment and validation process is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service, or technology.
Long Term Training	Long-term skilling means any vocational training program undertaken for a year and above.
Term National Occupational Sta	NOS defines the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.

Qualifications	A formal outcome of an assessment and validation process is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
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