

## Qualification Pack



# Soil & Water Testing Lab Analyst

QP Code: AGR/Q8103

Version: 3.0

NSQF Level: 5

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## Qualification Pack

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## Qualification Pack

### AGR/Q8103: Soil & Water Testing Lab Analyst

#### Brief Job Description

The individual is responsible for conducting soil and water test and interpreting the soil analysis results in relation to the soil fertility management. The person prepares the Soil and Water Health card illustrating the desired cropping pattern, soil amendments and integrated nutrient management and water management to be undertaken. The individual is also responsible for determining the nutrient status of plants as well as organic manure or compost being utilized as organic source of nutrients.

#### Personal Attributes

Soil & Water Testing Lab Analyst must possess good communication, facilitation, analytical, interpretation and organizing skills. The individual should be strenuous, perseverant, quick learner and have inclination to new learning, multitasking and disciplined.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [AGR/N8101: Adhere to sanitation and safety guidelines of the lab](#)
2. [AGR/N8108: Conduct physical & chemical analysis of soil, plants and manure/compost](#)
3. [AGR/N8109: Conduct water sample analysis](#)
4. [AGR/N8110: Ensure preparation and distribution of the Soil and Water Health Card](#)
5. [AGR/N8111: Supervise and train the Lab Assistant in good lab practices](#)
6. [DGT/VSQ/N0103: Employability Skills \(90 Hours\)](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Industries
<b>Occupation</b>	Research and Development
<b>Country</b>	India
<b>NSQF Level</b>	5

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<b>Credits</b>	16
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/2132.0300
<b>Minimum Educational Qualification &amp; Experience</b>	<p>Completed 2nd year of UG (UG Diploma) OR Pursuing 2nd year of UG (and continuous education) OR Completed 2nd year diploma after 12th OR Pursuing 2nd year of 2-year diploma after 12th OR 12th pass with 1 year Vocational Education &amp; training (NTC or NAC or CITS) OR Completed 3 year diploma after 10th with 1 Year of experience relevant experience OR 12th grade Pass with 2 Years of experience relevant experience OR 10th grade pass with 4 Years of experience relevant experience OR Previous relevant Qualification of NSQF Level ( Level 4 and with minimum education as 8th Grade pass) with 3 Years of experience relevant experience OR Previous relevant Qualification of NSQF Level (Level 4.5 with 1.5- year relevant experience)</p>
<b>Minimum Level of Education for Training in School</b>	
<b>Pre-Requisite License or Training</b>	Basic computer training
<b>Minimum Job Entry Age</b>	21 Years
<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	30/04/2025
<b>NSQC Approval Date</b>	27/01/2022
<b>Version</b>	3.0
<b>Reference code on NQR</b>	QG-05-AG-00279-2023-V1.1-ASCI
<b>NQR Version</b>	1.1

## Qualification Pack

### AGR/N8101: Adhere to sanitation and safety guidelines of the lab

#### Description

This OS unit is about maintaining personal hygiene and undertaking sanitation and safety measures in the lab.

#### Scope

The scope covers the following :

- Maintain personal hygiene
- Follow the lab sanitation guidelines
- Ensure safety at the lab

#### Elements and Performance Criteria

##### *Maintain personal hygiene*

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

- PC1.** follow recommended personal hygiene and sanitation practices, for example, washing/sanitizing hands, covering face with a bent elbow while coughing/sneezing, using PPE, etc.
- PC2.** follow recommended workplace hygiene and sanitation practices, for example, sanitizing workstation and equipment regularly, using disposable wipes and utensils, etc.

##### *Follow sanitation and safety guidelines of the lab*

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

- PC3.** identify the requirements and working of different rooms/chambers and equipment
- PC4.** oversee lab cleaning activities and undertake fumigation as and when required
- PC5.** remove all consumables and flammable items from the lab
- PC6.** place reagents/chemicals at their designated place alphabetically in accordance with their properties
- PC7.** clean/wash all the glasswares manually or through automatic washing machine in potable water
- PC8.** dry and sterilize glass-wares, etc. in hot air oven
- PC9.** clean and disinfect all tools/equipment/materials/supplies before and after use
- PC10.** place all the tools and equipment at the designated places after use
- PC11.** follow work instructions for maintaining the required lab environment
- PC12.** connect electrical tools and equipment safely and turn off when not in use
- PC13.** dispose any expired chemicals as per the Standard Operating Procedure (SOP)
- PC14.** optimise usage of electricity/ water/ materials in various tasks/ activities/ processes
- PC15.** segregate waste into different categories
- PC16.** dispose non-recyclable waste appropriately
- PC17.** deposit recyclable and reusable material at the identified location

##### *Ensure safety at the lab*

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

- PC18.** wear appropriate Personal Protective Equipment (PPE) while performing work in accordance with the workplace policy
- PC19.** assess risks prior to performing manual handling jobs, and work according to currently recommended safe practices
- PC20.** follow the safety precautions provided by the manufacturer when operating instruments
- PC21.** follow the instructions mentioned on the labels of chemicals/pesticides/fumigants etc. to avoid hazards
- PC22.** check for spills/leakages in various tasks/activities/processes
- PC23.** dispose waste safely and correctly in the designated area
- PC24.** follow procedures for dealing with accidents, fires and emergencies, as per the workplace requirements
- PC25.** use emergency equipment in accordance with manufacturer's specifications and workplace requirements
- PC26.** follow government / workplace advisories in case of outbreak of any disease/disaster
- PC27.** carry out all procedures and follow work instructions for controlling operational risks

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant legislation, standards, policies and procedures at work
- KU2.** relevant health and safety requirements applicable to the work environment
- KU3.** own job role, responsibilities and sources of information pertaining to the lab operations
- KU4.** impact of not following the health, hygiene, safety and quality standards on consumers and the business
- KU5.** layout of the lab
- KU6.** good lab practices
- KU7.** importance of cleanliness and aseptic condition in the lab
- KU8.** methods of lab cleaning and mopping
- KU9.** disinfectants and fumigants used in the lab
- KU10.** different chemicals, lab-ware, equipment and their use
- KU11.** maintenance of various equipment of the lab
- KU12.** benefits of resource optimisation
- KU13.** common practices of conserving electricity/water/material/supplies
- KU14.** waste management and methods of waste disposal
- KU15.** the risks to health and safety and the measures to be taken to control those risks in your area of work
- KU16.** workplace procedures and requirements for the treatment of workplace injuries/illnesses
- KU17.** basic emergency first aid procedure
- KU18.** why accidents, incidents and problems should be reported and the appropriate action to be taken

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### Generic Skills (GS)

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

- GS1.** assist in recording the data as per the requirement
- GS2.** report problems to the appropriate personnel in a timely manner
- GS3.** read instruction manual for lab equipment/supplies
- GS4.** communicate clearly and effectively with farmers, co-workers and other stakeholders
- GS5.** comprehend information shared by senior people and experts

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Maintain personal hygiene</i>	5	5	-	5
<b>PC1.</b> follow recommended personal hygiene and sanitation practices, for example, washing/sanitizing hands, covering face with a bent elbow while coughing/sneezing, using PPE, etc.	-	-	-	-
<b>PC2.</b> follow recommended workplace hygiene and sanitation practices, for example, sanitizing workstation and equipment regularly, using disposable wipes and utensils, etc.	-	-	-	-
<i>Follow sanitation and safety guidelines of the lab</i>	15	25	-	10
<b>PC3.</b> identify the requirements and working of different rooms/chambers and equipment	-	-	-	-
<b>PC4.</b> oversee lab cleaning activities and undertake fumigation as and when required	-	-	-	-
<b>PC5.</b> remove all consumables and flammable items from the lab	-	-	-	-
<b>PC6.</b> place reagents/chemicals at their designated place alphabetically in accordance with their properties	-	-	-	-
<b>PC7.</b> clean/wash all the glasswares manually or through automatic washing machine in potable water	-	-	-	-
<b>PC8.</b> dry and sterilize glass-wares, etc. in hot air oven	-	-	-	-
<b>PC9.</b> clean and disinfect all tools/equipment/materials/supplies before and after use	-	-	-	-
<b>PC10.</b> place all the tools and equipment at the designated places after use	-	-	-	-
<b>PC11.</b> follow work instructions for maintaining the required lab environment	-	-	-	-
<b>PC12.</b> connect electrical tools and equipment safely and turn off when not in use	-	-	-	-



### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> dispose any expired chemicals as per the Standard Operating Procedure (SOP)	-	-	-	-
<b>PC14.</b> optimise usage of electricity/ water/ materials in various tasks/ activities/ processes	-	-	-	-
<b>PC15.</b> segregate waste into different categories	-	-	-	-
<b>PC16.</b> dispose non-recyclable waste appropriately	-	-	-	-
<b>PC17.</b> deposit recyclable and reusable material at the identified location	-	-	-	-
<i>Ensure safety at the lab</i>	<b>10</b>	<b>10</b>	-	<b>15</b>
<b>PC18.</b> wear appropriate Personal Protective Equipment (PPE) while performing work in accordance with the workplace policy	-	-	-	-
<b>PC19.</b> assess risks prior to performing manual handling jobs, and work according to currently recommended safe practices	-	-	-	-
<b>PC20.</b> follow the safety precautions provided by the manufacturer when operating instruments	-	-	-	-
<b>PC21.</b> follow the instructions mentioned on the labels of chemicals/pesticides/fumigants etc. to avoid hazards	-	-	-	-
<b>PC22.</b> check for spills/leakages in various tasks/activities/processes	-	-	-	-
<b>PC23.</b> dispose waste safely and correctly in the designated area	-	-	-	-
<b>PC24.</b> follow procedures for dealing with accidents, fires and emergencies, as per the workplace requirements	-	-	-	-
<b>PC25.</b> use emergency equipment in accordance with manufacturer's specifications and workplace requirements	-	-	-	-
<b>PC26.</b> follow government / workplace advisories in case of outbreak of any disease/disaster	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC27.</b> carry out all procedures and follow work instructions for controlling operational risks	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>40</b>	<b>-</b>	<b>30</b>

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N8101
<b>NOS Name</b>	Adhere to sanitation and safety guidelines of the lab
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Industries
<b>Occupation</b>	Research and Development
<b>NSQF Level</b>	4
<b>Credits</b>	1
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	27/01/2025
<b>NSQC Clearance Date</b>	27/01/2022

## Qualification Pack

### AGR/N8108: Conduct physical & chemical analysis of soil, plants and manure/compost

#### Description

This OS unit is about conducting physical and chemical analysis of soil, plants and manures/compost sample.

#### Scope

The scope covers the following :

- Perform physical analysis of soil samples
- Perform chemical analysis of soil samples
- Analyse the reclamation requirement of problematic soils
- Analyse the nutrient composition in plants
- Analyse the nutrient composition of manures/composts

#### Elements and Performance Criteria

##### *Perform physical analysis of soil samples*

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

- PC1.** determine soil texture - International Pipette method (mechanical analysis)
- PC2.** calculate and determine soil moisture percentage (water holding capacity) at field Capacity & permanent wilting point through pressure plate
- PC3.** determine bulk density- Weighing Bottle method, Clod method, Core method
- PC4.** determine hydraulic conductivity of soil- Constant Head method, Falling Head method
- PC5.** determine soil moisture content- Gravimetric method, Infrared Moisture Meter method

##### *Perform chemical analysis of soil samples*

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

- PC6.** determine soil pH
- PC7.** determine Organic Carbon - Walkley & Black method, UV Spectrophotometer method
- PC8.** determine Calcium carbonate ( $\text{CaCO}_3$ ) - Acid Neutralization & Schrotus Apparatus method
- PC9.** determine Nitrogen - Alkaline Permanganate method, Kjeldahl method
- PC10.** determine Phosphorus - Olsen's and Bray's method
- PC11.** determine Potassium and Sodium on Flame Photometer
- PC12.** determine Calcium & Magnesium - EDTA Titrimetric method
- PC13.** determine Boron - Hot Water method
- PC14.** determine Sulphur - Precipitation method, Turbidimetric method
- PC15.** determine Zinc, Copper, Iron, Manganese - DTPA method (Atomic Absorption Spectroscopy)
- PC16.** determine Cation Exchange Capacity - Ammonium Saturation & Sodium Saturation method
- PC17.** use mini-soil kits for analysis of macro & micro-nutrients and calculation of quantity of available nutrient in the soil

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### *Analyse the reclamation requirement of problematic soils*

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

**PC18.** determine gypsum requirement of alkali soil

**PC19.** determine the lime requirement of acidic soil

### *Analyse the nutrient composition in plants*

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

**PC20.** determine total Nitrogen - Micro-Kjeldahl method

**PC21.** determine total Phosphorus using Ammonium Molybdate-Vanadate solution

**PC22.** determine total Potassium - Flame Photometer method and calculate on oven dry basis

**PC23.** determine total Sulfur - Standard Curve method

**PC24.** determine Zinc, Copper, Iron and Manganese in plants using Atomic Absorption Spectroscopy

**PC25.** determine Boron in plants - Azomethine H Method

### *Analyse the nutrient composition of manure/compost*

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

**PC26.** determine moisture content or dry matter

**PC27.** determine total NPK as per standard methods

**PC28.** determine secondary nutrients (Ca, Mg, S) as per standard methods

**PC29.** determine micro-nutrients (Zn, Cu, Fe, Mn & B)

**PC30.** determine C:N ratio

**PC31.** determine pH and EC

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** relevant legislation, standards, policies and procedures at work

**KU2.** applicable health and safety requirements at the lab

**KU3.** procedure for seeking guidance and work related information and clarification

**KU4.** fundamentals of soil, plants and manures/compost testing

**KU5.** good laboratory practices

**KU6.** operation and maintenance of various lab equipment/apparatus

**KU7.** basic concepts of Soil Health Management

**KU8.** basic principles of laboratory instruments for soil, plants and manure/compost analysis.

**KU9.** analysis of the soil microbiological activity

**KU10.** importance and use of Soil Testing Kit

**KU11.** reagents required for conducting various physical & chemical tests for soil, plants and manure/compost analysis

**KU12.** different analytical methods for analysis of macro and micro nutrients

**KU13.** titration and change of end point colour while titrating the extractants

**KU14.** international atomic weights

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- KU15.** normality, specific gravity and percent by weight of acids and ammonia reagent in the laboratory
- KU16.** approximate pH values of acid and alkali samples
- KU17.** preparation of 1000 ppm solutions of different elements and their serial dilutions
- KU18.** list of the chemicals that serve as primary standard for the respective reactions with their equivalent weights
- KU19.** preparation of standard solutions and their serial dilutions
- KU20.** important conversion factors of different elements
- KU21.** EC readings according to temperature
- KU22.** nutrient deficiency symptoms in plants
- KU23.** instrument settings for flame photometer and atomic absorption spectroscopy

## Generic Skills (GS)

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

- GS1.** note the data required for record keeping purpose
- GS2.** read the relevant guides and manuals
- GS3.** listen attentively to comprehend the information/ instructions being shared
- GS4.** communicate politely and professionally with co-workers, seniors and customers
- GS5.** make decisions pertaining to the concerned area of work
- GS6.** identify possible problems that may arise during work and take preventative action
- GS7.** plan and schedule tasks to ensure timely completion
- GS8.** apply domain knowledge and experience to improve work efficiency

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform physical analysis of soil samples</i>	<b>10</b>	<b>20</b>	-	<b>10</b>
<b>PC1.</b> determine soil texture - International Pipette method (mechanical analysis)	-	-	-	-
<b>PC2.</b> calculate and determine soil moisture percentage (water holding capacity) at field Capacity & permanent wilting point through pressure plate	-	-	-	-
<b>PC3.</b> determine bulk density- Weighing Bottle method, Clod method, Core method	-	-	-	-
<b>PC4.</b> determine hydraulic conductivity of soil- Constant Head method, Falling Head method	-	-	-	-
<b>PC5.</b> determine soil moisture content- Gravimetric method, Infrared Moisture Meter method	-	-	-	-
<i>Perform chemical analysis of soil samples</i>	<b>15</b>	<b>40</b>	-	<b>10</b>
<b>PC6.</b> determine soil pH	-	-	-	-
<b>PC7.</b> determine Organic Carbon - Walkley & Black method, UV Spectrophotometer method	-	-	-	-
<b>PC8.</b> determine Calcium carbonate (CaCO <sub>3</sub> ) - Acid Neutralization & Schrotus Apparatus method	-	-	-	-
<b>PC9.</b> determine Nitrogen - Alkaline Permanganate method, Kjeldahl method	-	-	-	-
<b>PC10.</b> determine Phosphorus - Olsen's and Bray's method	-	-	-	-
<b>PC11.</b> determine Potassium and Sodium on Flame Photometer	-	-	-	-
<b>PC12.</b> determine Calcium & Magnesium - EDTA Titrimetric method	-	-	-	-
<b>PC13.</b> determine Boron - Hot Water method	-	-	-	-
<b>PC14.</b> determine Sulphur - Precipitation method, Turbidimetric method	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC15.</b> determine Zinc, Copper, Iron, Manganese - DTPA method (Atomic Absorption Spectroscopy)	-	-	-	-
<b>PC16.</b> determine Cation Exchange Capacity - Ammonium Saturation & Sodium Saturation method	-	-	-	-
<b>PC17.</b> use mini-soil kits for analysis of macro & micro-nutrients and calculation of quantity of available nutrient in the soil	-	-	-	-
<i>Analyse the reclamation requirement of problematic soils</i>	<b>5</b>	<b>10</b>	-	<b>5</b>
<b>PC18.</b> determine gypsum requirement of alkali soil	-	-	-	-
<b>PC19.</b> determine the lime requirement of acidic soil	-	-	-	-
<i>Analyse the nutrient composition in plants</i>	<b>10</b>	<b>20</b>	-	<b>10</b>
<b>PC20.</b> determine total Nitrogen - Micro-Kjeldahl method	-	-	-	-
<b>PC21.</b> determine total Phosphorus using Ammonium Molybdate-Vanadate solution	-	-	-	-
<b>PC22.</b> determine total Potassium - Flame Photometer method and calculate on oven dry basis	-	-	-	-
<b>PC23.</b> determine total Sulfur - Standard Curve method	-	-	-	-
<b>PC24.</b> determine Zinc, Copper, Iron and Manganese in plants using Atomic Absorption Spectroscopy	-	-	-	-
<b>PC25.</b> determine Boron in plants – Azomethine H Method	-	-	-	-
<i>Analyse the nutrient composition of manure/compost</i>	<b>10</b>	<b>20</b>	-	<b>5</b>
<b>PC26.</b> determine moisture content or dry matter	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC27.</b> determine total NPK as per standard methods	-	-	-	-
<b>PC28.</b> determine secondary nutrients (Ca, Mg, S) as per standard methods	-	-	-	-
<b>PC29.</b> determine micro-nutrients (Zn, Cu, Fe, Mn & B)	-	-	-	-
<b>PC30.</b> determine C:N ratio	-	-	-	-
<b>PC31.</b> determine pH and EC	-	-	-	-
<b>NOS Total</b>	<b>50</b>	<b>110</b>	-	<b>40</b>

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N8108
<b>NOS Name</b>	Conduct physical & chemical analysis of soil, plants and manure/compost
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Industries
<b>Occupation</b>	Research & Development
<b>NSQF Level</b>	5
<b>Credits</b>	5
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	27/01/2025
<b>NSQC Clearance Date</b>	27/01/2022

## Qualification Pack

### AGR/N8109: Conduct water sample analysis

#### Description

This OS unit is about testing and analysis of water sample.

#### Scope

The scope covers the following :

- Analyse the water sample

#### Elements and Performance Criteria

##### *Analyze the water sample*

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

- PC1.** determine water pH
- PC2.** determine EC of water
- PC3.** determine Total Dissolved Solids (TDS)
- PC4.** determine Total Suspended Solids (TSS)
- PC5.** determine Carbonates and Bicarbonates
- PC6.** determine Calcium & Magnesium - EDTA Titrimetric method
- PC7.** determine residual sodium carbonate in water
- PC8.** determine Potassium & Sodium on Flame Photometer
- PC9.** determine Phosphorus
- PC10.** determine Nitrogen
- PC11.** determine Boron
- PC12.** determine Chloride
- PC13.** determine Sulphates on Spectrophotometer

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant legislation, standards, policies and procedures at work
- KU2.** applicable health and safety requirements at the lab
- KU3.** procedure for seeking guidance and work related information and clarification
- KU4.** fundamentals of water testing
- KU5.** good laboratory practices
- KU6.** operation and maintenance of various lab equipment/apparatus
- KU7.** principles involved in conducting various chemical tests for the analysis of water sample
- KU8.** reagents required for conducting various chemical tests for the analysis
- KU9.** methods of conducting various chemical tests for the analysis of water sample

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- KU10.** international atomic weights
- KU11.** normality, specific gravity and percent by weight of acids and ammonia reagents in the laboratory
- KU12.** approximate pH values of important acidic and basic solutions
- KU13.** preparation of 1000 ppm solutions of different elements
- KU14.** list of the chemicals that serve as primary standard for the respective reactions with their equivalent weights
- KU15.** preparation of standard solutions and dilution to get required concentrations
- KU16.** conversion factors of important elements
- KU17.** EC readings according to the temperature
- KU18.** instrument settings for flame photometer and atomic absorption spectroscopy

## Generic Skills (GS)

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

- GS1.** note the data required for record keeping purpose
- GS2.** read the relevant guides and manuals
- GS3.** listen attentively to comprehend the information/ instructions being shared
- GS4.** communicate politely and professionally with co-workers, seniors and customers
- GS5.** make decisions pertaining to the concerned area of work
- GS6.** identify possible problems that may arise during work and take preventative action
- GS7.** plan and schedule tasks to ensure timely completion
- GS8.** apply domain knowledge and experience to improve work efficiency

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Analyze the water sample</i>	<b>30</b>	<b>50</b>	-	<b>20</b>
<b>PC1.</b> determine water pH	-	-	-	-
<b>PC2.</b> determine EC of water	-	-	-	-
<b>PC3.</b> determine Total Dissolved Solids (TDS)	-	-	-	-
<b>PC4.</b> determine Total Suspended Solids (TSS)	-	-	-	-
<b>PC5.</b> determine Carbonates and Bicarbonates	-	-	-	-
<b>PC6.</b> determine Calcium & Magnesium - EDTA Titrimetric method	-	-	-	-
<b>PC7.</b> determine residual sodium carbonate in water	-	-	-	-
<b>PC8.</b> determine Potassium & Sodium on Flame Photometer	-	-	-	-
<b>PC9.</b> determine Phosphorus	-	-	-	-
<b>PC10.</b> determine Nitrogen	-	-	-	-
<b>PC11.</b> determine Boron	-	-	-	-
<b>PC12.</b> determine Chloride	-	-	-	-
<b>PC13.</b> determine Sulphates on Spectrophotometer	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>50</b>	-	<b>20</b>

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N8109
<b>NOS Name</b>	Conduct water sample analysis
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Industries
<b>Occupation</b>	Research and Development
<b>NSQF Level</b>	5
<b>Credits</b>	1
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	27/01/2025
<b>NSQC Clearance Date</b>	27/01/2022

## Qualification Pack

### AGR/N8110: Ensure preparation and distribution of the Soil and Water Health Card

#### Description

This OS unit is about ensuring preparation, upload and distribution of the Soil and Water Health Card.

#### Scope

The scope covers the following :

- Calculate the amount of nutrients present/required
- Ensure upload of prepared Soil and Water Health Card on the portal
- Ensure Soil and Water Health Card distribution

#### Elements and Performance Criteria

##### *Calculate the amount of nutrients present/required*

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

- PC1.** calculate the quantity of nutrients present post conducting various chemical tests
- PC2.** interpret the analytical results - which should reliably indicate if a nutrient is deficient, adequate, or in excess (in some cases toxic to plants)
- PC3.** calculate the amount of nutrients and fertilizers required for soil fertility management

##### *Ensure upload of prepared Soil and Water Health Card on the portal*

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

- PC4.** recommend the fertilizer and micro-nutrients doses based upon the soil & water test calibrated for field conditions considering different factors such as yield target, crop nutrient requirement, management of the crop, soil type, method of fertilizer application, etc
- PC5.** recommend the amount of manure/compost and green manure crops
- PC6.** recommend any amendment (Gypsum/Pyrite/Lime), if required
- PC7.** recommend Integrated Nutrient Management practices to be adopted
- PC8.** ensure the information on the Soil and Water Health card is simple and easy to understand by the farmer
- PC9.** ensure processed information get uploaded on the portal for future assessment
- PC10.** ensure the Soil and Water Health Card is uploaded on the portal
- PC11.** prepare a soil fertility map using GIS for the concerned location

##### *Ensure Soil and Water Health Card distribution*

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

- PC12.** arrange for the distribution of the Soil and Water Health card
- PC13.** supervise the proper distribution of the Soil and Water Health card

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

## Qualification Pack

- KU1.** relevant legislation, standards, policies and procedures at work
- KU2.** relevant health and safety requirements applicable to the work environment
- KU3.** own job role, responsibilities and sources of information pertaining to the lab operations
- KU4.** impact of not following the health, hygiene, safety and quality standards on consumers and the business
- KU5.** information provided in the Soil and Water Health card
- KU6.** importance of Soil and Water Health card
- KU7.** computer knowledge to handle the data
- KU8.** international atomic weights
- KU9.** normality, specific gravity and percent by weight of acids and ammonia reagent in the laboratory
- KU10.** approximate pH values of acids and alkali solutions
- KU11.** list of the chemicals that serve as primary standard for the respective reactions with their equivalent weights
- KU12.** important formulae for analysis of available nutrients and desired requirement
- KU13.** important conversion factors of different elements
- KU14.** basic concepts of Sustainable Agricultural Practices
- KU15.** Soil Health Management - concepts, goals and methods
- KU16.** criteria of essential nutrients and deficiency symptoms of nutrients in plants
- KU17.** sustainable soil fertility management - suitable cropping pattern and soil amendments
- KU18.** Integrated Nutrient Management in a sustainable manner
- KU19.** use of GPS and GIS for mapping and interpretation of data
- KU20.** importance of organic manure (animal manure and composts) and manuring in sustainable agriculture
- KU21.** irrigation schedule as per the land and crop requirement and water management
- KU22.** soil analysis and specific land qualities for preparation of Soil Health card
- KU23.** water analysis and specific water body qualities for preparation of Water Health card

## Generic Skills (GS)

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

- GS1.** prepare the report in a simple language
- GS2.** read operation manual for good lab practices
- GS3.** communicate effectively with other assistants, seniors and customers
- GS4.** make decisions pertaining to the concerned area of work
- GS5.** identify problems that may arise in carrying out tasks and take preventative action
- GS6.** plan and schedule various lab operations
- GS7.** analyze the information gathered from one's observations and experiences
- GS8.** apply domain knowledge to complete the work effectively



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Calculate the amount of nutrients present/required</i>	<b>10</b>	<b>15</b>	-	<b>5</b>
<b>PC1.</b> calculate the quantity of nutrients present post conducting various chemical tests	-	-	-	-
<b>PC2.</b> interpret the analytical results - which should reliably indicate if a nutrient is deficient, adequate, or in excess (in some cases toxic to plants)	-	-	-	-
<b>PC3.</b> calculate the amount of nutrients and fertilizers required for soil fertility management	-	-	-	-
<i>Ensure upload of prepared Soil and Water Health Card on the portal</i>	<b>15</b>	<b>30</b>	-	<b>15</b>
<b>PC4.</b> recommend the fertilizer and micro-nutrients doses based upon the soil & water test calibrated for field conditions considering different factors such as yield target, crop nutrient requirement, management of the crop, soil type, method of fertilizer application, etc	-	-	-	-
<b>PC5.</b> recommend the amount of manure/compost and green manure crops	-	-	-	-
<b>PC6.</b> recommend any amendment (Gypsum/Pyrite/Lime), if required	-	-	-	-
<b>PC7.</b> recommend Integrated Nutrient Management practices to be adopted	-	-	-	-
<b>PC8.</b> ensure the information on the Soil and Water Health card is simple and easy to understand by the farmer	-	-	-	-
<b>PC9.</b> ensure processed information get uploaded on the portal for future assessment	-	-	-	-
<b>PC10.</b> ensure the Soil and Water Health Card is uploaded on the portal	-	-	-	-
<b>PC11.</b> prepare a soil fertility map using GIS for the concerned location	-	-	-	-
<i>Ensure Soil and Water Health Card distribution</i>	<b>5</b>	-	-	<b>5</b>

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> arrange for the distribution of the Soil and Water Health card	-	-	-	-
<b>PC13.</b> supervise the proper distribution of the Soil and Water Health card	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>45</b>	<b>-</b>	<b>25</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N8110
<b>NOS Name</b>	Ensure preparation and distribution of the Soil and Water Health Card
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Industries
<b>Occupation</b>	Research and Development
<b>NSQF Level</b>	5
<b>Credits</b>	1
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	27/01/2025
<b>NSQC Clearance Date</b>	27/01/2022

## Qualification Pack

### AGR/N8111: Supervise and train the Lab Assistant in good lab practices

#### Description

This OS unit is about overseeing activities of the Lab Assistant and training him/her in good lab practices.

#### Scope

The scope covers the following :

- Supervise the activities of the Lab Assistant
- Train the Lab Assistant in good lab practices

#### Elements and Performance Criteria

##### *Supervise the activities of the Lab Assistant*

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

- PC1.** demonstrate work to the Lab Assistant
- PC2.** assign work and monitor the progress made by the assistant
- PC3.** guide the lab assistant to adhere to safety and sanitation guidelines of the lab
- PC4.** monitor the data entry work undertaken by the assistant
- PC5.** oversee smooth execution of sample registration and timely dispatch of Soil & Water Health Card

##### *Train the Lab Assistant in good lab practices*

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

- PC6.** train the lab assistant in calibrating equipment in accordance with written instructions
- PC7.** show the assistant how to take observations accurately post-experiment
- PC8.** demonstrate the preparation of 1000 ppm solutions of different elements
- PC9.** demonstrate the preparation of standard solutions
- PC10.** train the assistant in uploading data of the Soil and Water Health card on the portal
- PC11.** train the assistant to communicate effectively with customers and co-workers
- PC12.** educate the assistant in good lab practices

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant legislation, standards, policies and procedures at work
- KU2.** own job role & responsibilities pertaining to work
- KU3.** good laboratory practices
- KU4.** safety measures to be undertaken when operating in lab
- KU5.** operation and maintenance of various lab equipment/apparatus

## Qualification Pack

- KU6.** reagents required for conducting various physical and chemical tests for soil, plants and manure/compost analysis
- KU7.** Basic Terminologies: Standard Solution, Normal Solution and Normality, Normality, Molar Solution and Molarity, Molal Solution, Percentage composition by weight, Percentage composition by volume, Parts per million (ppm), kg/ha, Milli equivalent per litre
- KU8.** international atomic weights
- KU9.** normality, specific gravity and percent by weight of acids and ammonia reagent in the laboratory
- KU10.** chemicals that serve as primary standard for the respective reactions with their equivalent weights
- KU11.** method of preparation of standard solutions
- KU12.** important conversion factors of different elements
- KU13.** EC reading according to temperature
- KU14.** different types of chemicals/reagent, their use and safe handling
- KU15.** different types of lab equipment and lab-wares and their working
- KU16.** safe Lab Operation Procedure
- KU17.** different types of register to be maintained in the lab
- KU18.** importance of Soil & Water Health Card
- KU19.** information provided in the Soil & Water Health Card
- KU20.** methods of training and guiding the subordinates

## Generic Skills (GS)

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

- GS1.** write plan of work
- GS2.** communicate clearly and effectively with the stakeholders
- GS3.** make decisions pertaining to the concerned area of work
- GS4.** plan and organize tasks with the help of the assistant
- GS5.** identify problems that may arise in carrying out tasks and take preventative action
- GS6.** think through the problem, evaluate the possible solutions and choose the best possible solution(s)
- GS7.** analyze, evaluate and apply the information gathered from observation, experience, reasoning or communication, as a guide to thought and action

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Supervise the activities of the Lab Assistant</i>	<b>15</b>	<b>15</b>	-	<b>10</b>
<b>PC1.</b> demonstrate work to the Lab Assistant	-	-	-	-
<b>PC2.</b> assign work and monitor the progress made by the assistant	-	-	-	-
<b>PC3.</b> guide the lab assistant to adhere to safety and sanitation guidelines of the lab	-	-	-	-
<b>PC4.</b> monitor the data entry work undertaken by the assistant	-	-	-	-
<b>PC5.</b> oversee smooth execution of sample registration and timely dispatch of Soil & Water Health Card	-	-	-	-
<i>Train the Lab Assistant in good lab practices</i>	<b>15</b>	<b>25</b>	-	<b>20</b>
<b>PC6.</b> train the lab assistant in calibrating equipment in accordance with written instructions	-	-	-	-
<b>PC7.</b> show the assistant how to take observations accurately post-experiment	-	-	-	-
<b>PC8.</b> demonstrate the preparation of 1000 ppm solutions of different elements	-	-	-	-
<b>PC9.</b> demonstrate the preparation of standard solutions	-	-	-	-
<b>PC10.</b> train the assistant in uploading data of the Soil and Water Health card on the portal	-	-	-	-
<b>PC11.</b> train the assistant to communicate effectively with customers and co-workers	-	-	-	-
<b>PC12.</b> educate the assistant in good lab practices	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>40</b>	-	<b>30</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N8111
<b>NOS Name</b>	Supervise and train the Lab Assistant in good lab practices
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Industries
<b>Occupation</b>	Research and Development
<b>NSQF Level</b>	5
<b>Credits</b>	1
<b>Version</b>	3.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	27/01/2025
<b>NSQC Clearance Date</b>	27/01/2022

## Qualification Pack

### DGT/VSQ/N0103: Employability Skills (90 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.** understand the significance of employability skills in meeting the current job market requirement and future of work
- PC2.** identify and explore learning and employability relevant portals
- PC3.** research about the different industries, job market trends, latest skills required and the available opportunities

##### *Constitutional values – Citizenship*

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

- PC4.** 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.
- PC5.** follow environmentally sustainable practices

##### *Becoming a Professional in the 21st Century*

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

- PC6.** recognize the significance of 21st Century Skills for employment



## Qualification Pack

- PC7.** 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
- PC8.** adopt a continuous learning mindset for personal and professional development

### *Basic English Skills*

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

- PC9.** use basic English for everyday conversation in different contexts, in person and over the telephone
- PC10.** read and understand routine information, notes, instructions, mails, letters etc. written in English
- PC11.** 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:

- PC12.** identify career goals based on the skills, interests, knowledge, and personal attributes
- PC13.** prepare a career development plan with short- and long-term goals

### *Communication Skills*

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

- PC14.** follow verbal and non-verbal communication etiquette while communicating in professional and public settings
- PC15.** use active listening techniques for effective communication
- PC16.** communicate in writing using appropriate style and format based on formal or informal requirements
- PC17.** work collaboratively with others in a team

### *Diversity & Inclusion*

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

- PC18.** communicate and behave appropriately with all genders and PwD
- PC19.** 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:

- PC20.** identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.
- PC21.** carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook
- PC22.** identify common components of salary and compute income, expenses, taxes, investments etc
- PC23.** 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:

- PC24.** operate digital devices and use their features and applications securely and safely
- PC25.** carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.
- PC26.** display responsible online behaviour while using various social media platforms

## Qualification Pack

- PC27.** create a personal email account, send and process received messages as per requirement
- PC28.** carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications
- PC29.** utilize virtual collaboration tools to work effectively

### Entrepreneurship

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

- PC30.** identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research
- PC31.** develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- PC32.** 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:

- PC33.** identify different types of customers and ways to communicate with them
- PC34.** identify and respond to customer requests and needs in a professional manner
- PC35.** use appropriate tools to collect customer feedback
- PC36.** follow appropriate hygiene and grooming standards

### Getting ready for apprenticeship & Jobs

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

- PC37.** create a professional Curriculum vitae (Résumé)
- PC38.** search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively
- PC39.** apply to identified job openings using offline /online methods as per requirement
- PC40.** answer questions politely, with clarity and confidence, during recruitment and selection
- PC41.** 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

## Qualification Pack

- KU11.** components of salary and 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
- KU16.** use applications such as word processors, spreadsheets etc.
- KU17.** how to identify business opportunities
- KU18.** types and needs of customers
- KU19.** how to apply for a job and prepare for an interview
- KU20.** 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 in English and other languages
- GS2.** communicate effectively using appropriate language in formal and informal settings
- GS3.** behave politely and appropriately with all to maintain effective work relationship
- GS4.** how to work in a virtual mode, using various technological platforms
- 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

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	<b>1</b>	<b>1</b>	-	-
<b>PC1.</b> understand the significance of employability skills in meeting the current job market requirement and future of work	-	-	-	-
<b>PC2.</b> identify and explore learning and employability relevant portals	-	-	-	-
<b>PC3.</b> research about the different industries, job market trends, latest skills required and the available opportunities	-	-	-	-
<i>Constitutional values – Citizenship</i>	<b>1</b>	<b>1</b>	-	-
<b>PC4.</b> 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.	-	-	-	-
<b>PC5.</b> follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	<b>1</b>	<b>3</b>	-	-
<b>PC6.</b> recognize the significance of 21st Century Skills for employment	-	-	-	-
<b>PC7.</b> 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	-	-	-	-
<b>PC8.</b> adopt a continuous learning mindset for personal and professional development	-	-	-	-
<i>Basic English Skills</i>	<b>3</b>	<b>4</b>	-	-
<b>PC9.</b> use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-

## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
<b>PC11.</b> write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development &amp; Goal Setting</i>	<b>1</b>	<b>2</b>	-	-
<b>PC12.</b> identify career goals based on the skills, interests, knowledge, and personal attributes	-	-	-	-
<b>PC13.</b> prepare a career development plan with short- and long-term goals	-	-	-	-
<i>Communication Skills</i>	<b>2</b>	<b>2</b>	-	-
<b>PC14.</b> follow verbal and non-verbal communication etiquette while communicating in professional and public settings	-	-	-	-
<b>PC15.</b> use active listening techniques for effective communication	-	-	-	-
<b>PC16.</b> communicate in writing using appropriate style and format based on formal or informal requirements	-	-	-	-
<b>PC17.</b> work collaboratively with others in a team	-	-	-	-
<i>Diversity &amp; Inclusion</i>	<b>1</b>	<b>1</b>	-	-
<b>PC18.</b> communicate and behave appropriately with all genders and PwD	-	-	-	-
<b>PC19.</b> escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	<b>2</b>	<b>3</b>	-	-
<b>PC20.</b> identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.	-	-	-	-
<b>PC21.</b> carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC22.</b> identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
<b>PC23.</b> identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	<b>3</b>	<b>5</b>	-	-
<b>PC24.</b> operate digital devices and use their features and applications securely and safely	-	-	-	-
<b>PC25.</b> carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.	-	-	-	-
<b>PC26.</b> display responsible online behaviour while using various social media platforms	-	-	-	-
<b>PC27.</b> create a personal email account, send and process received messages as per requirement	-	-	-	-
<b>PC28.</b> carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications	-	-	-	-
<b>PC29.</b> utilize virtual collaboration tools to work effectively	-	-	-	-
<i>Entrepreneurship</i>	<b>2</b>	<b>3</b>	-	-
<b>PC30.</b> identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
<b>PC31.</b> develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
<b>PC32.</b> identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	<b>1</b>	<b>2</b>	-	-
<b>PC33.</b> identify different types of customers and ways to communicate with them	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC34.</b> identify and respond to customer requests and needs in a professional manner	-	-	-	-
<b>PC35.</b> use appropriate tools to collect customer feedback	-	-	-	-
<b>PC36.</b> follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship &amp; Jobs</i>	<b>2</b>	<b>3</b>	-	-
<b>PC37.</b> create a professional Curriculum vitae (Résumé)	-	-	-	-
<b>PC38.</b> search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
<b>PC39.</b> apply to identified job openings using offline /online methods as per requirement	-	-	-	-
<b>PC40.</b> answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
<b>PC41.</b> identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
<b>NOS Total</b>	<b>20</b>	<b>30</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	DGT/VSQ/N0103
<b>NOS Name</b>	Employability Skills (90 Hours)
<b>Sector</b>	Cross Sectoral
<b>Sub-Sector</b>	Professional Skills
<b>Occupation</b>	Employability
<b>NSQF Level</b>	5
<b>Credits</b>	3
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	15/03/2024
<b>Next Review Date</b>	15/03/2027
<b>NSQC Clearance Date</b>	15/03/2024

## 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 the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/optional set of NOS.
4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score a minimum of 70% of % aggregate marks to successfully clear the assessment.



## Qualification Pack

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
AGR/N8101.Adhere to sanitation and safety guidelines of the lab	30	40	0	30	100	10
AGR/N8108.Conduct physical & chemical analysis of soil, plants and manure/compost	50	110	0	40	200	30
AGR/N8109.Conduct water sample analysis	30	50	0	20	100	20
AGR/N8110.Ensure preparation and distribution of the Soil and Water Health Card	30	45	0	25	100	25
AGR/N8111.Supervise and train the Lab Assistant in good lab practices	30	40	-	30	100	10
DGT/VSQ/N0103.Employability Skills (90 Hours)	20	30	-	-	50	5
<b>Total</b>	<b>190</b>	<b>315</b>	<b>-</b>	<b>145</b>	<b>650</b>	<b>100</b>

## Qualification Pack

### Acronyms

<b>NOS</b>	National Occupational Standard(s)
<b>NSQF</b>	National Skills Qualifications Framework
<b>QP</b>	Qualifications Pack
<b>TVET</b>	Technical and Vocational Education and Training
<b>PPEs</b>	Personal Protective Equipment
<b>pH</b>	Potential of Hydrogen
<b>EC</b>	Electrical Conductivity
<b>UV</b>	Ultraviolet
<b>EDTA</b>	Ethylenediaminetetraacetic acid
<b>DTPA</b>	Pentetic acid or Diethylenetriaminepentaacetic acid
<b>NPK</b>	Nitrogen, Phosphorus and Potassium
<b>C:N</b>	Ratio of Carbon to Nitrogen
<b>ppm</b>	parts per million
<b>pH</b>	Potential of Hydrogen
<b>EC</b>	Electrical Conductivity
<b>EDTA</b>	Ethylenediaminetetraacetic acid
<b>ppm</b>	parts per million
<b>SOP</b>	Standard operating procedure
<b>pH</b>	Potential of Hydrogen
<b>GIS</b>	Geographic Information System
<b>EC</b>	Electrical Conductivity
<b>EC</b>	Electrical Conductivity
<b>EC</b>	Electrical Conductivity

## Qualification Pack

### Glossary

<b>Sector</b>	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.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
<b>Job role</b>	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
<b>Occupational Standards (OS)</b>	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.
<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standards (NOS)</b>	NOS are occupational standards which apply uniquely in the Indian context.
<b>Qualifications Pack (QP)</b>	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.
<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	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.
<b>Scope</b>	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.

## Qualification Pack

<b>Knowledge and Understanding (KU)</b>	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.
<b>Organisational Context</b>	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.
<b>Technical Knowledge</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (GS)</b>	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.
<b>Electives</b>	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.
<b>Options</b>	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.