

## Qualification Pack



# Horticulturist (Protected Cultivation)

Electives: Hi-Tech Nursery Cultivation/ Vegetable Cultivation/ Flower Cultivation

QP Code: AGR/Q1011

Version: 1.0

NSQF Level: 5

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## Qualification Pack

### AGR/Q1011: Horticulturist (Protected Cultivation)

#### Brief Job Description

The Horticulturist (Protected Cultivation) undertakes various activities which involve preparation of soil, deciding on planting material, planting, nurturing and harvesting in a protected environment such as greenhouse, polyhouse, shade-net house or tunnels. The individual is also involved in the setup and maintenance of the structure and the environment inside the protected structure.

#### Personal Attributes

The individual must be physically strong and has the ability to perform manual work for long duration. The person must possess good organization skills and maintain interpersonal relationship with others.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

1. [AGR/N1009: Install and commission protected cultivation structure/s](#)
2. [AGR/N1010: Oversee the maintenance of the protected cultivation structure/s](#)
3. [AGR/N9908: Undertake basic entrepreneurial activities for small enterprise](#)
4. [AGR/N9903: Maintain health and safety at the workplace](#)
5. [DGT/VSQ/N0103: Employability Skills \(90 Hours\)](#)

##### Electives (mandatory to select at least one):

###### Elective 1: Hi-Tech Nursery Cultivation

The person specializes in setting up and maintaining nursery under protected condition.

1. [AGR/N1011: Set up and maintain nursery under protected condition](#)

###### Elective 2: Vegetable Cultivation

The person specializes in the protected cultivation of vegetable crops.

1. [AGR/N1012: Carry out protected cultivation of vegetable crops](#)

###### Elective 3: Flower Cultivation

The person specializes in the protected cultivation of flower crops.

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### 1. [AGR/N1013: Carry out protected cultivation of flower crops](#)

## Qualification Pack (QP) Parameters

<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Crop Production
<b>Occupation</b>	Precision Farming
<b>Country</b>	India
<b>NSQF Level</b>	5
<b>Credits</b>	22
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/6113
<b>Minimum Educational Qualification &amp; Experience</b>	<p>Completed 2nd year of UG (UG Diploma) (in Agriculture/Horticulture/Agriculture Engineering or equivalent) with NA of experience</p> <p>OR</p> <p>Completed 3 year diploma after 10th (in Agriculture/Horticulture/Agriculture Engineering) with 1.5 years of experience relevant experience in Agriculture and allied sectors</p> <p>OR</p> <p>12th grade Pass with 3 Years of experience relevant experience in in Agriculture and allied sectors</p> <p>OR</p> <p>10th grade pass with 6 Years of experience relevant experience in in Agriculture and allied sectors</p> <p>OR</p> <p>Previous relevant Qualification of NSQF Level (4.5) with 1.5 years of experience relevant experience in in Agriculture and allied sectors</p> <p>OR</p> <p>Previous relevant Qualification of NSQF Level (4) with 3 Years of experience relevant experience in in Agriculture and allied sectors</p>
<b>Minimum Level of Education for Training in School</b>	10th Class
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	18 Years

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<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	27/08/2025
<b>NSQC Approval Date</b>	27/08/2024
<b>Version</b>	1.0
<b>Reference code on NQR</b>	QG-05-AG-02924-2024-V1-ASCI
<b>NQR Version</b>	1.0

## Qualification Pack

### AGR/N1009: Install and commission protected cultivation structure/s

#### Description

This unit is about selection of the site, crop, type of protected cultivation, its installation and commissioning.

#### Scope

The scope covers the following :

- Prepare for the installation of protected cultivation structure/s
- Supervise installation of protected cultivation structure/s
- Commission protected cultivation structure/s

#### Elements and Performance Criteria

##### *Prepare for installation of protected cultivation structure/s*

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

- PC1.** select a site suitable for protected cultivation
- PC2.** gather details of the crops to be grown such as growing period, growing media and growing system, environmental conditions required, etc.
- PC3.** identify the type/s of protected cultivation structure/s to be installed based on the information gathered about site, soil and climatic conditions
- PC4.** check the structure's material, orientation, dimensions, length-width proportions, roofing, sloping, insulation, ventilation, provision for sunlight, etc.
- PC5.** check for electricity and water supply, storage, filtration and distribution provisions
- PC6.** select the environmental control solutions for cooling, heating, humidification, fertigation, lighting, enriching gaseous composition, irrigation, fogging, pesticide spraying, etc.
- PC7.** select the vendor and place order for appropriate protected cultivation structure, accessories and environment control technologies
- PC8.** organize the implements, equipment and materials required for installation of the protected cultivation structure
- PC9.** prepare the site for installation of protected cultivation structure

##### *Supervise installation of protected cultivation structure/s*

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

- PC10.** ensure the basic framework for the protected cultivation structure/s is installed as per the desired stability and specifications
- PC11.** supervise the installation process of auxiliary facilities such as electric points and wiring, water supply and storage, maintenance workshop, communication systems, physical barriers for pests, wind, dust, etc.
- PC12.** co-ordinate the installation of connectivity with the drainage and irrigation system
- PC13.** co-ordinate with the experts for installation of various environmental control measures and technology

##### *Commission protected cultivation structure/s*



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

- PC14.** check the quality of the structures installed
- PC15.** test the environment controls for desired operability
- PC16.** check the adequacy of various types of accessories used in installing protected cultivation structures
- PC17.** check the ventilation facility for adequate air circulation suited to crop requirements
- PC18.** check if the irrigation system is functioning adequately

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** need for protected cultivation
- KU2.** types of protected cultivation structures and technologies, their advantages, disadvantages and applications
- KU3.** crops grown under protected cultivation
- KU4.** site, soil and crop related considerations for selecting and designing a protected cultivation solution
- KU5.** various types of environmental control measures and technology used for various types of protected cultivation
- KU6.** recommended environmental conditions required to achieve optimum growth of plants
- KU7.** authorized sources for protected cultivation information, materials and technology
- KU8.** installation and commissioning process for various types of protected cultivation structures, accessories and facilities
- KU9.** different types of equipment for monitoring of environmental parameters- thermometers, humidity meters, pH meter, Electrical Conductivity (EC) meter, lux meter, CO2 enrichment or maintenance equipment
- KU10.** how to take equipment readings for monitoring environmental parameters
- KU11.** importance of following environmental and ecological best practices to minimise the impact on the environment
- KU12.** Government schemes available for protected cultivation

## Generic Skills (GS)

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

- GS1.** write common words/signs and set phrases used in the work
- GS2.** prepare checklists for reference
- GS3.** fill out forms, make lists of materials required, and write simple reports in local language or Hindi about work specifications, requirements and status etc.
- GS4.** measure all dimensions in metric scale
- GS5.** perform basic arithmetic calculations- addition, subtraction, multiplication and division processes
- GS6.** read and interpret work related information from various sources in local language or Hindi

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- GS7.** communicate effectively with co-workers and other stakeholders
- GS8.** spot discrepancies or errors and select the most efficient solution
- GS9.** plan one's daily tasks to achieve maximum productivity
- GS10.** establish priorities and deadlines in consultation with others and record them
- GS11.** be punctual and work as per agreed priorities
- GS12.** manage distractions and maintain workplace discipline
- GS13.** listen to concerns and doubts of employees, vendors and clients carefully and address them
- GS14.** be courteous and polite in communications
- GS15.** establish workable solutions for problems in hand in consultation with others and record them
- GS16.** breakdown relevant work process into its constituent activities for ease of analysis
- GS17.** identify ways to increase productivity and reduce errors



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation of protected cultivation structure/s</i>	<b>12</b>	<b>15</b>	-	<b>15</b>
<b>PC1.</b> select a site suitable for protected cultivation	-	-	-	-
<b>PC2.</b> gather details of the crops to be grown such as growing period, growing media and growing system, environmental conditions required, etc.	-	-	-	-
<b>PC3.</b> identify the type/s of protected cultivation structure/s to be installed based on the information gathered about site, soil and climatic conditions	-	-	-	-
<b>PC4.</b> check the structure's material, orientation, dimensions, length-width proportions, roofing, sloping, insulation, ventilation, provision for sunlight, etc.	-	-	-	-
<b>PC5.</b> check for electricity and water supply, storage, filtration and distribution provisions	-	-	-	-
<b>PC6.</b> select the environmental control solutions for cooling, heating, humidification, fertigation, lighting, enriching gaseous composition, irrigation, fogging, pesticide spraying, etc.	-	-	-	-
<b>PC7.</b> select the vendor and place order for appropriate protected cultivation structure, accessories and environment control technologies	-	-	-	-
<b>PC8.</b> organize the implements, equipment and materials required for installation of the protected cultivation structure	-	-	-	-
<b>PC9.</b> prepare the site for installation of protected cultivation structure	-	-	-	-
<i>Supervise installation of protected cultivation structure/s</i>	<b>8</b>	<b>10</b>	-	<b>10</b>
<b>PC10.</b> ensure the basic framework for the protected cultivation structure/s is installed as per the desired stability and specifications	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> supervise the installation process of auxiliary facilities such as electric points and wiring, water supply and storage, maintenance workshop, communication systems, physical barriers for pests, wind, dust, etc.	-	-	-	-
<b>PC12.</b> co-ordinate the installation of connectivity with the drainage and irrigation system	-	-	-	-
<b>PC13.</b> co-ordinate with the experts for installation of various environmental control measures and technology	-	-	-	-
<i>Commission protected cultivation structure/s</i>	<b>10</b>	<b>15</b>	-	<b>5</b>
<b>PC14.</b> check the quality of the structures installed	-	-	-	-
<b>PC15.</b> test the environment controls for desired operability	-	-	-	-
<b>PC16.</b> check the adequacy of various types of accessories used in installing protected cultivation structures	-	-	-	-
<b>PC17.</b> check the ventilation facility for adequate air circulation suited to crop requirements	-	-	-	-
<b>PC18.</b> check if the irrigation system is functioning adequately	-	-	-	-
<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/N1009
<b>NOS Name</b>	Install and commission protected cultivation structure/s
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Crop Production
<b>Occupation</b>	Precision Farming
<b>NSQF Level</b>	4
<b>Credits</b>	3
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	27/08/2024
<b>Next Review Date</b>	27/08/2027
<b>NSQC Clearance Date</b>	27/08/2024

## Qualification Pack

### AGR/N1010: Oversee the maintenance of the protected cultivation structure/s

#### Description

This unit is about overseeing the maintenance of various protected cultivation structures during the course of cultivation.

#### Scope

The scope covers the following :

- Inspect the structure for planning the maintenance task
- Prepare for maintenance
- Monitor the maintenance activities

#### Elements and Performance Criteria

##### *Inspect the structure for planning the maintenance task*

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

- PC1.** inspect the protected cultivation structure's effectiveness and stability
- PC2.** check the condition of the various components of the greenhouse
- PC3.** check if the environmental controls such as cooling, heating, humidification, fertigation, carbon dioxide level control and lighting are functioning as per the requirement
- PC4.** inspect the functioning of the facility with respect to changing weather conditions

##### *Prepare for maintenance*

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

- PC5.** specify maintenance requirements and related information for the protected cultivation structure, facilities and controls to the maintenance team
- PC6.** plan the manpower required and the timelines for completion of the maintenance tasks
- PC7.** organize tools, equipment and materials required for the maintenance and repair activities
- PC8.** ensure the availability of logbooks and checklist pertaining to the maintenance tasks to be carried out

##### *Monitor the maintenance activities*

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

- PC9.** evaluate the quality of work performed
- PC10.** ensure timely repair and replacement of damaged parts and equipment
- PC11.** ensure tools, equipment and materials are used safely without wastage and damage
- PC12.** ensure cleaning and security of the protected cultivation structure

##### *Optimise resource utilization*

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

- PC13.** optimize usage of material including water in various tasks/activities/processes
- PC14.** plug spills/leakages and escalate to appropriate authority if unable to rectify

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- PC15.** carry out routine cleaning of tools, machines and equipment
- PC16.** optimize usage of electricity/energy in various tasks/activities/processes
- PC17.** report malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment
- PC18.** ensure electrical equipment and appliances are properly connected and turned off when not in use
- PC19.** segregate waste into different categories
- PC20.** dispose non-recyclable waste appropriately
- PC21.** deposit recyclable and reusable material at identified location
- PC22.** follow soil conservation practices

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** various types of protected cultivation structures and technologies and their maintenance requirements
- KU2.** various types of environmental control measures and technology and their maintenance requirements
- KU3.** recommended environmental conditions required to achieve optimum crop growth
- KU4.** authorized sources for protected cultivation information, materials and technology
- KU5.** inspection and maintenance process
- KU6.** tools, equipment and materials required for maintenance of protected cultivation structures
- KU7.** importance of following environmental and ecological best practice to minimise the impact on the environment
- KU8.** benefits of resource optimization
- KU9.** ways of efficiently managing material and water in the process
- KU10.** basics of electricity and prevalent energy efficient devices
- KU11.** ways to recognize common electrical problems
- KU12.** common practices of conserving electricity
- KU13.** waste management and methods of waste disposal
- KU14.** common sources of pollution and ways to minimize it
- KU15.** importance of soil conservation and various soil conservation practices

## Generic Skills (GS)

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

- GS1.** write common words/signs and set phrases used in the work
- GS2.** prepare checklists for reference
- GS3.** fill out forms, make lists of materials required, and write simple reports in local language or Hindi about work specifications, requirements and status etc.
- GS4.** measure all dimensions in metric scale

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- GS5.** perform arithmetic calculations of addition, subtraction, multiplication and division processes
- GS6.** read and interpret information from various written sources of work-related information in local language or Hindi
- GS7.** communicate effectively with the co-workers and other stakeholders
- GS8.** spot discrepancies or errors and select the most efficient solution
- GS9.** plan one's daily tasks to achieve maximum productivity
- GS10.** establish priorities and deadlines in consultation with others and record them
- GS11.** be punctual and work as per agreed priorities
- GS12.** manage distractions and maintain workplace discipline
- GS13.** listen to concerns and doubts of employees, vendors and clients carefully and address them
- GS14.** be courteous and polite in communications
- GS15.** establish workable solutions for problems in hand in consultation with others and record them
- GS16.** breakdown relevant work process into its constituent activities for ease of analysis
- GS17.** identify ways to increase productivity and reduce errors

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Inspect the structure for planning the maintenance task</i>	<b>8</b>	<b>10</b>	-	<b>9</b>
<b>PC1.</b> inspect the protected cultivation structure's effectiveness and stability	-	-	-	-
<b>PC2.</b> check the condition of the various components of the greenhouse	-	-	-	-
<b>PC3.</b> check if the environmental controls such as cooling, heating, humidification, fertigation, carbon dioxide level control and lighting are functioning as per the requirement	-	-	-	-
<b>PC4.</b> inspect the functioning of the facility with respect to changing weather conditions	-	-	-	-
<i>Prepare for maintenance</i>	<b>7</b>	<b>8</b>	-	<b>10</b>
<b>PC5.</b> specify maintenance requirements and related information for the protected cultivation structure, facilities and controls to the maintenance team	-	-	-	-
<b>PC6.</b> plan the manpower required and the timelines for completion of the maintenance tasks	-	-	-	-
<b>PC7.</b> organize tools, equipment and materials required for the maintenance and repair activities	-	-	-	-
<b>PC8.</b> ensure the availability of logbooks and checklist pertaining to the maintenance tasks to be carried out	-	-	-	-
<i>Monitor the maintenance activities</i>	<b>5</b>	<b>7</b>	-	<b>6</b>
<b>PC9.</b> evaluate the quality of work performed	-	-	-	-
<b>PC10.</b> ensure timely repair and replacement of damaged parts and equipment	-	-	-	-
<b>PC11.</b> ensure tools, equipment and materials are used safely without wastage and damage	-	-	-	-
<b>PC12.</b> ensure cleaning and security of the protected cultivation structure	-	-	-	-
<i>Optimise resource utilization</i>	<b>10</b>	<b>10</b>	-	<b>10</b>



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> optimize usage of material including water in various tasks/activities/processes	-	-	-	-
<b>PC14.</b> plug spills/leakages and escalate to appropriate authority if unable to rectify	-	-	-	-
<b>PC15.</b> carry out routine cleaning of tools, machines and equipment	-	-	-	-
<b>PC16.</b> optimize usage of electricity/energy in various tasks/activities/processes	-	-	-	-
<b>PC17.</b> report malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment	-	-	-	-
<b>PC18.</b> ensure electrical equipment and appliances are properly connected and turned off when not in use	-	-	-	-
<b>PC19.</b> segregate waste into different categories	-	-	-	-
<b>PC20.</b> dispose non-recyclable waste appropriately	-	-	-	-
<b>PC21.</b> deposit recyclable and reusable material at identified location	-	-	-	-
<b>PC22.</b> follow soil conservation practices	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>35</b>	<b>-</b>	<b>35</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N1010
<b>NOS Name</b>	Oversee the maintenance of the protected cultivation structure/s
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Crop Production
<b>Occupation</b>	Precision Farming
<b>NSQF Level</b>	4
<b>Credits</b>	2
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	27/08/2024
<b>Next Review Date</b>	27/08/2027
<b>NSQC Clearance Date</b>	27/08/2024

## Qualification Pack

### AGR/N9908: Undertake basic entrepreneurial activities for small enterprise

#### Description

This OS unit is about undertaking basic entrepreneurial or business activities in the agriculture sector.

#### Scope

The scope covers the following :

- Plan the agricultural enterprise/ business
- Manage the agricultural production process
- Manage the post-production and marketing processes

#### Elements and Performance Criteria

##### *Plan the agricultural enterprise/ business*

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

- PC1.** analyse the demand and supply of the relevant agricultural produce in the market
- PC2.** identify the target customers and assess their needs and expectations with respect to the quality and price of the produce
- PC3.** identify various types of agricultural entrepreneurship/ business opportunities
- PC4.** plan agricultural production with the use of relevant and efficient technologies for availing funds
- PC5.** identify appropriate and authentic advisory services/Government authority for skill upgradation to successfully plan and implement business activities
- PC6.** prepare a basic business plan for the agricultural entrepreneurship/business activities
- PC7.** identify appropriate sources of funding for the agricultural entrepreneurship/ business
- PC8.** coordinate with the relevant government authorities to subscribe to the relevant government schemes and programs to benefit from them
- PC9.** ensure compliance with the government structural reforms and framework along with the applicable rules and regulations while setting up the agricultural enterprise/ business

##### *Manage the agricultural production process*

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

- PC10.** select and arrange the necessary resources for the business operations
- PC11.** ensure the use of relevant and efficient production technologies as per planning and availability of funds
- PC12.** follow the recommended practices for efficient input resource management
- PC13.** optimise the production processes and output through the amalgamation of existing practices with smart technologies
- PC14.** follow the recommended sustainability practices during agricultural production to prevent adverse impacts on the environment and produce viz. deforestation, loss of biodiversity, soil degradation, etc.

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### *Manage the post-production and marketing processes*

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

- PC15.** ensure the availability of proper storage infrastructures and facilities post-production of the produce as per the industry quality standards
- PC16.** collect information related to the wholesale and retail price of produce
- PC17.** calculate the costs incurred and determine the price of the produce for profitability
- PC18.** ensure that the cost of production, transportation, and marketing are considered while calculating the cost and setting the price for the produce
- PC19.** collect information related to various subsidies/funds offered by the government, authorised state units and other financial institutions involved with the promotion of the produce
- PC20.** select appropriate marketing channels for the produce, considering the relevant requirements and constraints
- PC21.** identify various risks to production and post-production processes and manage them appropriately
- PC22.** undertake outreach programs to promote agricultural products and services, and expand agri-business
- PC23.** prepare and execute a marketing plan considering the 4Ps i.e. product, price, promotion, and place and 4As i.e. acceptability, affordability, accessibility, and awareness
- PC24.** use the relevant digital services such as e-commerce, e-payments, electronic record-keeping, etc.
- PC25.** use efficient post-production logistics means to improve the supply quantity, reduce the cost to the consumer, and increase demand consequently
- PC26.** ensure all the relevant information such as quality and quantity of produce, date of manufacture, batch number, and sale is recorded electronically and/ or manually
- PC27.** coordinate with the various stakeholders for efficient and sustainable agri-business growth and development

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** how to analyse the demand and supply of the relevant agricultural produce in the market
- KU2.** the process of identifying the target customers and assess their needs and expectations with respect to the quality and price of the produce
- KU3.** how to identify various types of agricultural entrepreneurship/ business opportunities
- KU4.** how to prepare a basic business plan for the agricultural entrepreneurship/business activities
- KU5.** appropriate sources of funding for the agricultural entrepreneurship/ businesses
- KU6.** the relevant government schemes and programs
- KU7.** the importance of ensuring compliance with the government structural reforms and framework, along with the applicable rules and regulations
- KU8.** various resources required for agricultural production
- KU9.** the process of planning agricultural production and the use of relevant technologies to enhance production

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- KU10.** the importance of ensuring no cause adverse impact on the environment and produce during production
- KU11.** the recommended practices to be followed for efficient input resource management
- KU12.** the process of optimising the production processes and output through the amalgamation of existing practices with smart technologies
- KU13.** the recommended sustainability practices to be followed during agricultural production to prevent and deal with deforestation, loss of biodiversity, soil degradation, etc.
- KU14.** how to collect information related to the wholesale and retail price of agricultural produce
- KU15.** how to calculate the economics of the produce viz. production cost, price of the produce, B:C Ratio etc.
- KU16.** relevant government schemes with the provision of subsidies/funds for the promotion of agricultural produce
- KU17.** the process of selecting appropriate marketing channels for marketing agricultural produce, and the applicable requirements and constraints
- KU18.** the relevant buyers of different types of agricultural produce such as co-operatives, retailers, local vendors, wholesalers, e-trading portals, marketing companies, exporters, etc.
- KU19.** how to identify and manage various risks to production and post-production processes
- KU20.** how to undertake outreach programs to promote agricultural products and services, and expand agri-business
- KU21.** the 4Ps i.e. product, price, promotion, and place and 4As i.e. acceptability, affordability, accessibility, and awareness considered while preparing and executing a marketing plan
- KU22.** use of the relevant digital services such as e-commerce, e-payments, electronic record-keeping, etc.
- KU23.** the importance of using efficient post-production logistics
- KU24.** the importance of maintaining various records accurately

## Generic Skills (GS)

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

- GS1.** maintain work-related notes and records
- GS2.** read the relevant literature to get the latest updates about the field work
- GS3.** communicate politely and professionally
- GS4.** listen attentively to understand the information being shared
- GS5.** plan and schedule tasks for efficient time management
- GS6.** identify possible disruptions to work and take appropriate preventive measures
- GS7.** take quick decisions to deal with workplace emergencies/ accident
- GS8.** evaluate all possible solutions to a problem to select the best one

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Plan the agricultural enterprise/ business</i>	<b>10</b>	<b>14</b>	-	<b>10</b>
<b>PC1.</b> analyse the demand and supply of the relevant agricultural produce in the market	-	-	-	-
<b>PC2.</b> identify the target customers and assess their needs and expectations with respect to the quality and price of the produce	-	-	-	-
<b>PC3.</b> identify various types of agricultural entrepreneurship/ business opportunities	-	-	-	-
<b>PC4.</b> plan agricultural production with the use of relevant and efficient technologies for availing funds	-	-	-	-
<b>PC5.</b> identify appropriate and authentic advisory services/Government authority for skill upgradation to successfully plan and implement business activities	-	-	-	-
<b>PC6.</b> prepare a basic business plan for the agricultural entrepreneurship/business activities	-	-	-	-
<b>PC7.</b> identify appropriate sources of funding for the agricultural entrepreneurship/ business	-	-	-	-
<b>PC8.</b> coordinate with the relevant government authorities to subscribe to the relevant government schemes and programs to benefit from them	-	-	-	-
<b>PC9.</b> ensure compliance with the government structural reforms and framework along with the applicable rules and regulations while setting up the agricultural enterprise/ business	-	-	-	-
<i>Manage the agricultural production process</i>	<b>8</b>	<b>10</b>	-	<b>8</b>
<b>PC10.</b> select and arrange the necessary resources for the business operations	-	-	-	-
<b>PC11.</b> ensure the use of relevant and efficient production technologies as per planning and availability of funds	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> follow the recommended practices for efficient input resource management	-	-	-	-
<b>PC13.</b> optimise the production processes and output through the amalgamation of existing practices with smart technologies	-	-	-	-
<b>PC14.</b> follow the recommended sustainability practices during agricultural production to prevent adverse impacts on the environment and produce viz. deforestation, loss of biodiversity, soil degradation, etc.	-	-	-	-
<i>Manage the post-production and marketing processes</i>	<b>12</b>	<b>16</b>	-	<b>12</b>
<b>PC15.</b> ensure the availability of proper storage infrastructures and facilities post-production of the produce as per the industry quality standards	-	-	-	-
<b>PC16.</b> collect information related to the wholesale and retail price of produce	-	-	-	-
<b>PC17.</b> calculate the costs incurred and determine the price of the produce for profitability	-	-	-	-
<b>PC18.</b> ensure that the cost of production, transportation, and marketing are considered while calculating the cost and setting the price for the produce	-	-	-	-
<b>PC19.</b> collect information related to various subsidies/funds offered by the government, authorised state units and other financial institutions involved with the promotion of the produce	-	-	-	-
<b>PC20.</b> select appropriate marketing channels for the produce, considering the relevant requirements and constraints	-	-	-	-
<b>PC21.</b> identify various risks to production and post-production processes and manage them appropriately	-	-	-	-
<b>PC22.</b> undertake outreach programs to promote agricultural products and services, and expand agri-business	-	-	-	-



### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC23.</b> prepare and execute a marketing plan considering the 4Ps i.e. product, price, promotion, and place and 4As i.e. acceptability, affordability, accessibility, and awareness	-	-	-	-
<b>PC24.</b> use the relevant digital services such as e-commerce, e-payments, electronic record-keeping, etc.	-	-	-	-
<b>PC25.</b> use efficient post-production logistics means to improve the supply quantity, reduce the cost to the consumer, and increase demand consequently	-	-	-	-
<b>PC26.</b> ensure all the relevant information such as quality and quantity of produce, date of manufacture, batch number, and sale is recorded electronically and/ or manually	-	-	-	-
<b>PC27.</b> coordinate with the various stakeholders for efficient and sustainable agri-business growth and development	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>40</b>	<b>-</b>	<b>30</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N9908
<b>NOS Name</b>	Undertake basic entrepreneurial activities for small enterprise
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic
<b>NSQF Level</b>	4
<b>Credits</b>	1
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	27/08/2024
<b>Next Review Date</b>	27/08/2027
<b>NSQC Clearance Date</b>	27/08/2024

## Qualification Pack

### AGR/N9903: Maintain health and safety at the workplace

#### Description

This OS is about maintaining health and safety of self and other co-workers at the workplace

#### Scope

The scope covers the following :

- Maintain personal hygiene
- Maintain clean and safe workplace
- Administer appropriate emergency procedures

#### Elements and Performance Criteria

##### *Maintain personal hygiene*

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

- PC1.** wash hands, legs and face with soap/alcohol based sanitizer at reasonable intervals
- PC2.** wash the worn clothes with soap and sun dry before use next time
- PC3.** ensure the face is covered with mask or three layers of cloth-piece
- PC4.** follow the workplace sanitization norms including distancing from sick people

##### *Maintain clean and safe workplace*

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

- PC5.** carry out basic safety checks before operation of all tools, implements, and machinery and report identified hazards to the supervisor
- PC6.** wear appropriate Personal Protective Equipment (PPE) while performing work in accordance with the workplace policy
- PC7.** follow the instructions mentioned on the labels of chemicals/pesticides/fumigants etc to avoid hazards
- PC8.** assess risks prior to performing manual handling jobs, and work according to currently recommended safe practices
- PC9.** sanitize equipment, tools and machinery before and after use
- PC10.** use equipment and materials safely and correctly and return the same to designated storage after use
- PC11.** dispose waste safely and correctly in the designated area
- PC12.** recognize risks to bystanders and take required action to reduce the risks
- PC13.** work in a manner which minimizes environmental damage, ensuring all procedures and instructions for controlling risks are followed
- PC14.** report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger
- PC15.** follow government / workplace advisories incase of outbreak of any disease/disaster

##### *Administer appropriate emergency procedures*

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

## Qualification Pack

- PC16.** follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to the location of emergency, as per the workplace requirements
- PC17.** use emergency equipment in accordance with manufacturer's specifications and workplace requirements
- PC18.** provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques
- PC19.** recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate
- PC20.** report details of first aid administered in accordance with workplace procedures

## 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 and responsibilities and sources of information pertaining to work
- KU4.** who to approach for support in order to obtain work related information, clarifications and support
- KU5.** importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business
- KU6.** personal hygiene and fitness requirement
- KU7.** importance of sanitization of the workplace
- KU8.** types of Personal Protective Equipment (PPE) required at the workplace and their importance
- KU9.** the correct and safe way to use materials and equipment required for the work
- KU10.** the importance of good housekeeping at the workplace
- KU11.** safe waste disposal methods
- KU12.** methods for minimizing environmental damage during work
- KU13.** the risks to health and safety including contagious diseases and the measures to be taken to control those risks in the area of work
- KU14.** workplace procedures and requirements for the prevention and treatment of workplace injuries/illnesses.
- KU15.** basic emergency first aid procedure
- KU16.** local emergency services
- KU17.** why accidents, incidents and problems should be reported and the appropriate actions to be taken

## Generic Skills (GS)

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

- GS1.** record the data as per the requirement
- GS2.** report problems to the appropriate personnel in a timely manner

## Qualification Pack

- GS3.** read instruction manual for hand tool and equipments
- GS4.** communicate clearly and effectively with co-workers, and other stakeholders
- GS5.** comprehend information shared by senior people and experts
- GS6.** make decisions pertaining to personal hygiene and safety
- GS7.** schedule daily activities and draw up priorities
- GS8.** manage relationships with co-workers, manager and other stakeholders
- GS9.** assess situation and identify appropriate control measures

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Maintain personal hygiene</i>	<b>10</b>	<b>5</b>	<b>-</b>	<b>10</b>
<b>PC1.</b> wash hands, legs and face with soap/alcohol based sanitizer at reasonable intervals	-	-	-	-
<b>PC2.</b> wash the worn clothes with soap and sun dry before use next time	-	-	-	-
<b>PC3.</b> ensure the face is covered with mask or three layers of cloth-piece	-	-	-	-
<b>PC4.</b> follow the workplace sanitization norms including distancing from sick people	-	-	-	-
<i>Maintain clean and safe workplace</i>	<b>15</b>	<b>15</b>	<b>-</b>	<b>15</b>
<b>PC5.</b> carry out basic safety checks before operation of all tools, implements, and machinery and report identified hazards to the supervisor	-	-	-	-
<b>PC6.</b> wear appropriate Personal Protective Equipment (PPE) while performing work in accordance with the workplace policy	-	-	-	-
<b>PC7.</b> follow the instructions mentioned on the labels of chemicals/pesticides/fumigants etc to avoid hazards	-	-	-	-
<b>PC8.</b> assess risks prior to performing manual handling jobs, and work according to currently recommended safe practices	-	-	-	-
<b>PC9.</b> sanitize equipment, tools and machinery before and after use	-	-	-	-
<b>PC10.</b> use equipment and materials safely and correctly and return the same to designated storage after use	-	-	-	-
<b>PC11.</b> dispose waste safely and correctly in the designated area	-	-	-	-
<b>PC12.</b> recognize risks to bystanders and take required action to reduce the risks	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> work in a manner which minimizes environmental damage, ensuring all procedures and instructions for controlling risks are followed	-	-	-	-
<b>PC14.</b> report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger	-	-	-	-
<b>PC15.</b> follow government / workplace advisories incase of outbreak of any disease/disaster	-	-	-	-
<i>Administer appropriate emergency procedures</i>	<b>15</b>	<b>5</b>	-	<b>10</b>
<b>PC16.</b> follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to the location of emergency, as per the workplace requirements	-	-	-	-
<b>PC17.</b> use emergency equipment in accordance with manufacturer's specifications and workplace requirements	-	-	-	-
<b>PC18.</b> provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques	-	-	-	-
<b>PC19.</b> recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate	-	-	-	-
<b>PC20.</b> report details of first aid administered in accordance with workplace procedures	-	-	-	-
<b>NOS Total</b>	<b>40</b>	<b>25</b>	-	<b>35</b>



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N9903
<b>NOS Name</b>	Maintain health and safety at the workplace
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic
<b>NSQF Level</b>	4
<b>Credits</b>	1
<b>Version</b>	3.0
<b>Last Reviewed Date</b>	27/08/2024
<b>Next Review Date</b>	27/08/2027
<b>NSQC Clearance Date</b>	27/08/2024

## 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

## Qualification Pack

### AGR/N1011: Set up and maintain nursery under protected condition

#### Description

This unit is about establishing and maintaining a nursery under protected cultivation condition

#### Scope

The scope covers the following :

- Establish nursery under protected condition
- Maintain nursery under protected condition

#### Elements and Performance Criteria

##### *Establish nursery under protected cultivation*

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

- PC1.** evaluate the suitability of the site conditions for Hi-tech nursery establishment
- PC2.** ensure the availability of seeds, seedlings, compost/ manure and other related resources
- PC3.** measure the dimensions to plan the space allocation for nursery establishment
- PC4.** check the growth media for the desired characteristics and quality as per the requirement of the crop
- PC5.** prepare and treat soil and soilless media as per the requirement of crop/plants/flowers to be grown
- PC6.** prepare nursery beds according to the season and the crop/fruit/flower
- PC7.** use relevant sowing technique depending upon the nature and season in the nursery bed lines
- PC8.** arrange necessary implements and materials for nursery management
- PC9.** allot space for storing registers, notebooks, etc.
- PC10.** instruct the team about the standard work practices, proper care, maintenance activities etc.

##### *Maintain nursery under protected cultivation*

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

- PC11.** carry out hardening of the nursery plants by adjusting and acclimatizing the environment of the protected cultivation structure
- PC12.** check the stocks and required resources for nursery management
- PC13.** maintain records pertaining to mother plants, progeny, stock of plants etc. as per the standard work practices
- PC14.** label the plants as per the standard working procedures
- PC15.** perform irrigation, nutrition management and infestation control as per the need and crop requirements
- PC16.** carry out the recommended intercultural operations
- PC17.** harvest the seedlings for transplantation/sale
- PC18.** transplant seedlings and cuttings into pots correctly

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- PC19.** select and organise the seedlings that must be kept on display with minimum damage or disturbance to the seedlings
- PC20.** pack the plants properly in a polybag/container for transport/sale
- PC21.** suppress growth of seedlings that are not bought by pruning the tips in order to postpone planting

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** own role and responsibilities, terms of employment and related documentation
- KU2.** team and reporting relationships, division of responsibilities
- KU3.** safety and security processes and its importance
- KU4.** impact of not following the health, hygiene, safety and quality standards on consumers and the business
- KU5.** types of protected cultivation structures such as naturally ventilated polyhouse/greenhouse, fan and pad polyhouse, shade net polyhouse, etc
- KU6.** site conditions to evaluate the suitability for Hi-tech nursery
- KU7.** methods used in Hi-tech nursery for growing healthy seedlings and saplings
- KU8.** various operations in the nursery
- KU9.** need for environment and climatic control for nursery plants
- KU10.** importance of planning and calendarizing nursery operations
- KU11.** how to protect the nursery from environmental threats such as frost, drought, water logging, humidity, heat, etc.
- KU12.** selection and preparation of soil and soil-less media
- KU13.** the types of seed, seedling and plant anatomy, morphology, physiology
- KU14.** nursery hygiene and protection
- KU15.** need for root pruning, its process and precautions
- KU16.** various hardening activities and precautions to be taken
- KU17.** environment and climate adjustment considerations in a nursery
- KU18.** precautions to be taken while pruning the tips of seedlings
- KU19.** labelling of the seedlings to indicate their plant type and age
- KU20.** seedling display considerations
- KU21.** transplantation procedure for seedlings and cuttings
- KU22.** pest, disease and disorder and symptom recognition of host stress
- KU23.** how to recognise signs of damage or threats to seedlings
- KU24.** basic principles of integrated pest management
- KU25.** how to recognise nutritional deficiency/excess
- KU26.** chemical, biological and cultural methods and treatments available for seedlings health and protection
- KU27.** irrigation and nutrition management of seedlings

## Qualification Pack

**KU28.** range and use of tools, implements and powered and non-powered machinery used in nursery management

**KU29.** correct use, maintenance and storage of equipment and materials

## Generic Skills (GS)

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

- GS1.** write common words/signs and set phrases used in the work
- GS2.** prepare checklists for reference
- GS3.** fill out forms, make lists of materials required, and write simple reports in local language or Hindi about work specifications, requirements and status etc.
- GS4.** measure all dimensions in metric scale
- GS5.** perform arithmetic calculations of addition, subtraction, multiplication and division processes
- GS6.** read and interpret information from various written sources of work-related information in local language or Hindi
- GS7.** communicate effectively with the co-workers and other stakeholders
- GS8.** spot discrepancies or errors and select the most efficient solution
- GS9.** plan one's daily tasks to achieve maximum productivity
- GS10.** establish priorities and deadlines in consultation with others and record them
- GS11.** be punctual and work as per agreed priorities
- GS12.** manage distractions and maintain workplace discipline
- GS13.** listen to concerns and doubts of employees, vendors and clients carefully and address them
- GS14.** be courteous and polite in communications
- GS15.** establish workable solutions for problems in hand in consultation with others and record them
- GS16.** breakdown relevant work process into its constituent activities for ease of analysis
- GS17.** identify ways to increase productivity and reduce errors

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Establish nursery under protected cultivation</i>	<b>15</b>	<b>25</b>	-	<b>10</b>
<b>PC1.</b> evaluate the suitability of the site conditions for Hi-tech nursery establishment	-	-	-	-
<b>PC2.</b> ensure the availability of seeds, seedlings, compost/ manure and other related resources	-	-	-	-
<b>PC3.</b> measure the dimensions to plan the space allocation for nursery establishment	-	-	-	-
<b>PC4.</b> check the growth media for the desired characteristics and quality as per the requirement of the crop	-	-	-	-
<b>PC5.</b> prepare and treat soil and soilless media as per the requirement of crop/plants/flowers to be grown	-	-	-	-
<b>PC6.</b> prepare nursery beds according to the season and the crop/fruit/flower	-	-	-	-
<b>PC7.</b> use relevant sowing technique depending upon the nature and season in the nursery bed lines	-	-	-	-
<b>PC8.</b> arrange necessary implements and materials for nursery management	-	-	-	-
<b>PC9.</b> allot space for storing registers, notebooks, etc.	-	-	-	-
<b>PC10.</b> instruct the team about the standard work practices, proper care, maintenance activities etc.	-	-	-	-
<i>Maintain nursery under protected cultivation</i>	<b>15</b>	<b>25</b>	-	<b>10</b>
<b>PC11.</b> carry out hardening of the nursery plants by adjusting and acclimatizing the environment of the protected cultivation structure	-	-	-	-
<b>PC12.</b> check the stocks and required resources for nursery management	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> maintain records pertaining to mother plants, progeny, stock of plants etc. as per the standard work practices	-	-	-	-
<b>PC14.</b> label the plants as per the standard working procedures	-	-	-	-
<b>PC15.</b> perform irrigation, nutrition management and infestation control as per the need and crop requirements	-	-	-	-
<b>PC16.</b> carry out the recommended intercultural operations	-	-	-	-
<b>PC17.</b> harvest the seedlings for transplantation/sale	-	-	-	-
<b>PC18.</b> transplant seedlings and cuttings into pots correctly	-	-	-	-
<b>PC19.</b> select and organise the seedlings that must be kept on display with minimum damage or disturbance to the seedlings	-	-	-	-
<b>PC20.</b> pack the plants properly in a polybag/container for transport/sale	-	-	-	-
<b>PC21.</b> suppress growth of seedlings that are not bought by pruning the tips in order to postpone planting	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>50</b>	<b>-</b>	<b>20</b>



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N1011
<b>NOS Name</b>	Set up and maintain nursery under protected condition
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Crop Production
<b>Occupation</b>	Precision Farming
<b>NSQF Level</b>	4
<b>Credits</b>	3
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	31/08/2023
<b>Next Review Date</b>	31/08/2026
<b>NSQC Clearance Date</b>	31/08/2023

## Qualification Pack

### AGR/N1012: Carry out protected cultivation of vegetable crops

#### Description

This unit is about planting, nurturing and harvesting of vegetable crops under protected cultivation condition.

#### Scope

The scope covers the following :

- Prepare for cultivation
- Prepare media and planting material
- Plant a vegetable crop
- Nurture a vegetable crop
- Harvest a vegetable crop

#### Elements and Performance Criteria

##### *Prepare for cultivation*

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

- PC1.** select commercially viable vegetable crop and variety that can be grown under protected cultivation
- PC2.** select and set up protected structure based on the type of vegetable crop, environmental conditions, expected yield, budgets and resources available, etc.
- PC3.** assess and adjust the environmental conditions within the protected structure based on the requirement of the vegetable crop

##### *Prepare growth media*

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

- PC4.** select appropriate growth media for vegetable crop
- PC5.** decontaminate the media using methods such as chemical drenching/ fumigation, steaming, pasteurization and solarization
- PC6.** ensure the soil media is free from weeds and pests
- PC7.** prepare the soil media to have the desired pH, porosity, moisture retention capacity, salinity, organic content and anchorage for the vegetable crop
- PC8.** ensure the farming soil bed is raised high to prevent water logging
- PC9.** prepare for usage of soilless media by installation of infrastructure
- PC10.** prepare the soil-less media in correct proportion to have dissolved nutrients, fertilizers and manures for the vegetable crop

##### *Plant a vegetable crop*

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

- PC11.** select planting material for vegetable crop such as seed, seedlings raised in nurseries, tissue cultured plantlets, etc.
- PC12.** clean and prepare the planting material
- PC13.** ensure the seed varieties are first-generation hybrids for optimal seed propagation

## Qualification Pack

**PC14.** plant the seeds/seedlings at the right time ensuring optimum planting density

### *Nurture a vegetable crop*

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

- PC15.** use low tunnel technique for covering the planted vegetable crops like cucumber, tomato, pepper and beans, till pollination of flowers
- PC16.** prepare daily/weekly irrigation and fertigation schedule as per the requirement of the crop
- PC17.** irrigate the crop using appropriate irrigation system such as micro-irrigation system/foggers or mist system
- PC18.** prepare and apply appropriate dose of manure fertilizer as per the crop requirement
- PC19.** apply micro-nutrients by foliar spray
- PC20.** carry out centring (or decentring) to promote the growth of auxiliary buds and lateral branches as per the requirement of the plant
- PC21.** trim the growing branches for further lateral branch formation, good spread and budding surface
- PC22.** prune the plants as per the pruning cycle
- PC23.** carry out plant management practices such as pinching, disbudding, de-shooting, defoliation, removal of faded vegetables and bending of shoots as required
- PC24.** manage the weeds using appropriate method
- PC25.** identify symptoms of disease, pest infestation, disorder and damage to the vegetable crop
- PC26.** apply appropriate measures for prevention and treatment of disease, pest infestation, disorder and damage to the vegetable crop

### *Harvest a vegetable crop*

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

- PC27.** select the appropriate harvesting method
- PC28.** harvest the vegetables as per the market requirement
- PC29.** store the vegetable produce temporarily, post-harvest without damaging it
- PC30.** use weighing machines to weigh the harvested produce accurately
- PC31.** sort and grade the harvested produce based on quality, colour and size
- PC32.** arrange buyers for the segregated produce which are not meeting the quality standards
- PC33.** pack, store and transport the marketable produce, ensuring that the produce remains fresh and damage free for a long time
- PC34.** market and sell the produce
- PC35.** complete the records required for the harvest and post-harvest activities

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** own role and responsibilities, terms of employment and related documentation
- KU2.** team and reporting relationships
- KU3.** organisational communication protocols, including formal and informal
- KU4.** safety and security processes and their importance

## Qualification Pack

- KU5.** importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business
- KU6.** advantages of growing vegetable crops under protected condition
- KU7.** favourable conditions for vegetable cultivation under protected structures
- KU8.** major vegetable crops and their varieties that are commercially grown under protected condition
- KU9.** types of protected structures used for growing various vegetable crops
- KU10.** systems/technology for providing favourable environmental or growth conditions with respect to light intensity, temperature, humidity and oxygen/carbon dioxide levels
- KU11.** growing systems for vegetable crops under protected condition
- KU12.** hydroponics and aeroponics system
- KU13.** soil and soilless growing media, their composition, characteristics and selection criteria
- KU14.** agricultural practices to prepare the growing media as per the requirement of the crop such as tillage, bed preparation, fumigation, mulching, manuring, residue incorporation, adding nutrients, etc.
- KU15.** types of planting materials used for vegetable crop cultivation and their treatment
- KU16.** planting practices used for common and commercially viable vegetable crops
- KU17.** growth regulation practices used for common vegetable crops, their purpose, tools and correct procedures
- KU18.** nutrition management of common vegetable crops under protected condition
- KU19.** common irrigation and drainage systems and techniques used for growing vegetable crops under different types of protected structures
- KU20.** pests, weeds and diseases in vegetable crops and their symptoms, prevention and control procedures
- KU21.** yield enhancement and harvesting practices used for vegetable crops
- KU22.** market requirement for commercial vegetables in terms of stage of harvest, stem length, bud size, quality and quantity of produce, type of packaging, etc.
- KU23.** sorting and grading of vegetable crop
- KU24.** safe handling practices of the harvested produce
- KU25.** records required for harvest and post-harvest activities
- KU26.** packing methods, processes and materials used for the harvested vegetables
- KU27.** methods of post-harvest storage of the produce
- KU28.** safe and efficient methods for loading and unloading, and stacking of bags/crates in and off the transport
- KU29.** crop rotation with suitable crops
- KU30.** inter-cropping and barrier cropping

## Generic Skills (GS)

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

- GS1.** write common words/signs and set phrases used in the work
- GS2.** prepare checklists for reference

## Qualification Pack

- GS3.** fill out forms, make lists of materials required, and write simple reports in local language or Hindi about work specifications, requirements and status etc.
- GS4.** measure all dimensions in metric scale
- GS5.** perform basic arithmetic calculations
- GS6.** read and interpret information from various written sources of work-related information in local language or Hindi
- GS7.** communicate effectively with co-workers and other stakeholders
- GS8.** spot discrepancies or errors and select the most efficient solution
- GS9.** plan one's daily tasks to achieve maximum productivity
- GS10.** establish priorities and deadlines in consultation with others and record them
- GS11.** be punctual and work as per agreed priorities
- GS12.** manage distractions and maintain workplace discipline
- GS13.** listen to concerns and doubts of employees, vendors and clients carefully and address them
- GS14.** be courteous and polite in communications
- GS15.** establish workable solutions for problems in hand in consultation with others and record them
- GS16.** breakdown relevant work process into its constituent activities for ease of analysis
- GS17.** identify ways to increase productivity and reduce errors

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for cultivation</i>	<b>3</b>	<b>4</b>	-	<b>2</b>
<b>PC1.</b> select commercially viable vegetable crop and variety that can be grown under protected cultivation	-	-	-	-
<b>PC2.</b> select and set up protected structure based on the type of vegetable crop, environmental conditions, expected yield, budgets and resources available, etc.	-	-	-	-
<b>PC3.</b> assess and adjust the environmental conditions within the protected structure based on the requirement of the vegetable crop	-	-	-	-
<i>Prepare growth media</i>	<b>7</b>	<b>10</b>	-	<b>4</b>
<b>PC4.</b> select appropriate growth media for vegetable crop	-	-	-	-
<b>PC5.</b> decontaminate the media using methods such as chemical drenching/ fumigation, steaming, pasteurization and solarization	-	-	-	-
<b>PC6.</b> ensure the soil media is free from weeds and pests	-	-	-	-
<b>PC7.</b> prepare the soil media to have the desired pH, porosity, moisture retention capacity, salinity, organic content and anchorage for the vegetable crop	-	-	-	-
<b>PC8.</b> ensure the farming soil bed is raised high to prevent water logging	-	-	-	-
<b>PC9.</b> prepare for usage of soilless media by installation of infrastructure	-	-	-	-
<b>PC10.</b> prepare the soil-less media in correct proportion to have dissolved nutrients, fertilizers and manures for the vegetable crop	-	-	-	-
<i>Plant a vegetable crop</i>	<b>5</b>	<b>6</b>	-	<b>2</b>

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> select planting material for vegetable crop such as seed, seedlings raised in nurseries, tissue cultured plantlets, etc.	-	-	-	-
<b>PC12.</b> clean and prepare the planting material	-	-	-	-
<b>PC13.</b> ensure the seed varieties are first-generation hybrids for optimal seed propagation	-	-	-	-
<b>PC14.</b> plant the seeds/seedlings at the right time ensuring optimum planting density	-	-	-	-
<i>Nurture a vegetable crop</i>	<b>11</b>	<b>15</b>	-	<b>7</b>
<b>PC15.</b> use low tunnel technique for covering the planted vegetable crops like cucumber, tomato, pepper and beans, till pollination of flowers	-	-	-	-
<b>PC16.</b> prepare daily/weekly irrigation and fertigation schedule as per the requirement of the crop	-	-	-	-
<b>PC17.</b> irrigate the crop using appropriate irrigation system such as micro-irrigation system/foggers or mist system	-	-	-	-
<b>PC18.</b> prepare and apply appropriate dose of manure fertilizer as per the crop requirement	-	-	-	-
<b>PC19.</b> apply micro-nutrients by foliar spray	-	-	-	-
<b>PC20.</b> carry out centring (or decentring) to promote the growth of auxiliary buds and lateral branches as per the requirement of the plant	-	-	-	-
<b>PC21.</b> trim the growing branches for further lateral branch formation, good spread and budding surface	-	-	-	-
<b>PC22.</b> prune the plants as per the pruning cycle	-	-	-	-
<b>PC23.</b> carry out plant management practices such as pinching, disbudding, de-shooting, defoliation, removal of faded vegetables and bending of shoots as required	-	-	-	-
<b>PC24.</b> manage the weeds using appropriate method	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC25.</b> identify symptoms of disease, pest infestation, disorder and damage to the vegetable crop	-	-	-	-
<b>PC26.</b> apply appropriate measures for prevention and treatment of disease, pest infestation, disorder and damage to the vegetable crop	-	-	-	-
<i>Harvest a vegetable crop</i>	<b>8</b>	<b>10</b>	-	<b>6</b>
<b>PC27.</b> select the appropriate harvesting method	-	-	-	-
<b>PC28.</b> harvest the vegetables as per the market requirement	-	-	-	-
<b>PC29.</b> store the vegetable produce temporarily, post-harvest without damaging it	-	-	-	-
<b>PC30.</b> use weighing machines to weigh the harvested produce accurately	-	-	-	-
<b>PC31.</b> sort and grade the harvested produce based on quality, colour and size	-	-	-	-
<b>PC32.</b> arrange buyers for the segregated produce which are not meeting the quality standards	-	-	-	-
<b>PC33.</b> pack, store and transport the marketable produce, ensuring that the produce remains fresh and damage free for a long time	-	-	-	-
<b>PC34.</b> market and sell the produce	-	-	-	-
<b>PC35.</b> complete the records required for the harvest and post-harvest activities	-	-	-	-
<b>NOS Total</b>	<b>34</b>	<b>45</b>	-	<b>21</b>



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N1012
<b>NOS Name</b>	Carry out protected cultivation of vegetable crops
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Crop Production
<b>Occupation</b>	Precision Farming
<b>NSQF Level</b>	4
<b>Credits</b>	3
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	27/08/2024
<b>Next Review Date</b>	27/08/2027
<b>NSQC Clearance Date</b>	27/08/2024

## Qualification Pack

### AGR/N1013: Carry out protected cultivation of flower crops

#### Description

This unit describes the key considerations and methods of growing flower crops under protected cultivation

#### Scope

The scope covers the following :

- Prepare for cultivation
- Prepare media and planting material
- Plant a flower crop
- Nurture a flower crop
- Harvest a flower crop

#### Elements and Performance Criteria

##### *Prepare for cultivation*

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

- PC1.** select a site with ample sunlight, distant from low lying area and suitable environmental conditions for flower crop under protected cultivation
- PC2.** select commercially viable varieties of flowers that can be grown under protected cultivation in the selected site such as rose, gerbera, carnation, anthurium, lily, orchids, chrysanthemum, etc.
- PC3.** set up structure for protected cultivation based on types of flower crop, conditions to be altered, output volumes, budgets and resources available, etc.
- PC4.** apply measures to test and alter the environmental conditions within the protected cultivation structure based on the requirements of the flower crop

##### *Prepare the growth media*

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

- PC5.** select appropriate soil or soilless medium for the flower crop
- PC6.** prepare the media to have appropriate pH, porosity, moisture retention, salinity, organic content and anchorage as required for the flower crop
- PC7.** decontaminate the media using methods such as chemical drenching/ fumigation, steaming, pasteurization and solarization

##### *Plant a flower crop*

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

- PC8.** ensure flat planting bed for flowers
- PC9.** select planting material like, seeds or saplings, tissue cultured plantlets based on the flower variety and planting medium
- PC10.** apply appropriate propagation method for the flower crop such as shield or T-budding, stenting method, cuttings, micro-propagation
- PC11.** prepare the planting material such as seeds, seedlings or cuttings

## Qualification Pack

**PC12.** plant the planting material maintaining the right spacing to ensure optimum planting density

### *Nurture a flower crop*

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

**PC13.** prepare daily/weekly irrigation and fertigation schedule as per the requirement of the crop

**PC14.** apply appropriate micro-irrigation techniques including use of fertigation equipment, spraying system, exhaust fan and cooling pads as per the stage of growth of the flower crop

**PC15.** ensure good quality of filtered water for flower crop

**PC16.** manage weeds using appropriate method

**PC17.** prepare and apply appropriate dose of manure fertilizer as per crop requirement

**PC18.** apply micro-nutrients by foliar spray

**PC19.** carry out centering (or decentering), to promote the growth of auxiliary buds and lateral branches as per the requirement of the plant using wired nets

**PC20.** trim the growing branches for further lateral branch formation, good spread and budding surface

**PC21.** prune and trim the terminal of the plants as per their cycle

**PC22.** carry out the plant management practices of pinching, disbudding, de-shooting, defoliation, removal of faded flowers and bending of shoots as per plant requirement

**PC23.** identify indicators of disease, infestation, disorder and damage to the flower crop

**PC24.** apply appropriate measures for prevention and treatment of disease, infestation, disorder and damage to the flower crop

### *Harvest a flower crop*

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

**PC25.** select appropriate harvesting practices of loose and cut flower

**PC26.** harvest the flowers as per the market requirement in terms of stage of harvest, stem length, bud size, quality and quantity of produce, type of packaging, etc.

**PC27.** pack the flowers for temporary storage

**PC28.** use weighing machine to accurately weigh the produce

**PC29.** sort and grade the harvested produce based on quality, colour, stem strength and size

**PC30.** process the segregated produce which are not meeting the quality standards

**PC31.** pack, store and transport the marketable produce, ensuring that the produce remains fresh and damage free for a long time

**PC32.** record the details of harvest and post-harvest activities in the desired format

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** own role and responsibilities, terms of employment and related documentation

**KU2.** team and reporting relationships

**KU3.** organisational communication protocols, including formal and informal

**KU4.** safety and security processes and their importance

**KU5.** impact of not following the health, hygiene, safety and quality standards on consumers and the business

## Qualification Pack

- KU6.** advantages of growing flower crops in greenhouses
- KU7.** favorable conditions for flower cultivation under protected cultivation
- KU8.** major flower crops and their varieties that are grown under protected cultivation
- KU9.** types of protected cultivation structures used for various commercially viable flower crops
- KU10.** measures for providing favorable environmental or growth conditions with respect to light intensity, temperature, humidity and oxygen/carbon dioxide levels
- KU11.** growing systems for flower crops under protected cultivation
- KU12.** soil and soilless growing mediums, their composition and characteristics
- KU13.** types of planting materials used for flower crops, and their treatment
- KU14.** planting practices used for common commercially viable flower crops and the required tools
- KU15.** growth regulation practices used for common commercially viable flower crops, their purpose, tools and correct procedures
- KU16.** nutrition and irrigation management of common commercially viable flower crops under protected cultivations
- KU17.** common irrigation and drainage systems and techniques used for growing flower crops under different types of protected cultivation structures
- KU18.** pests, weeds and diseases in common commercially viable flower crops and their indications, prevention and mitigation procedures
- KU19.** yield enhancement and harvesting practices used for flower crops
- KU20.** market requirement for various commercial flowers produce in terms of stage of harvest, stem length, bud size, quality and quantity of produce, type of packaging, etc.
- KU21.** sorting and grading of flower crop
- KU22.** methods of temporary storage of produce and precautions to be taken
- KU23.** records required for harvest and post-harvest processing
- KU24.** packing methods, processes and materials used for harvested flowers
- KU25.** methods of post-harvest storage of flowers
- KU26.** safe and efficient methods for loading and unloading, and stacking of bags/crates in and off the transport

## Generic Skills (GS)

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

- GS1.** write common words/signs and set phrases used in the work
- GS2.** prepare checklists for reference
- GS3.** fill out forms, make lists of materials required, and write simple reports in local language or Hindi about work specifications, requirements and status etc.
- GS4.** measure all dimensions in metric scale
- GS5.** perform basic arithmetic calculations
- GS6.** read and interpret information from various written sources of work-related information in local language or Hindi
- GS7.** communicate effectively with co-workers and other stakeholders
- GS8.** spot discrepancies or errors and select the most efficient solution

## Qualification Pack

- GS9.** plan one's daily tasks to achieve maximum productivity
- GS10.** establish priorities and deadlines in consultation with others and record them
- GS11.** manage distractions and maintain workplace discipline
- GS12.** listen to concerns and doubts of employees, vendors and clients carefully and address them
- GS13.** be courteous and polite in communications
- GS14.** establish workable solutions for problems in hand in consultation with others and record them
- GS15.** breakdown relevant work process into its constituent activities for ease of analysis
- GS16.** identify ways to increase productivity and reduce errors

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for cultivation</i>	<b>4</b>	<b>4</b>	-	<b>4</b>
<b>PC1.</b> select a site with ample sunlight, distant from low lying area and suitable environmental conditions for flower crop under protected cultivation	-	-	-	-
<b>PC2.</b> select commercially viable varieties of flowers that can be grown under protected cultivation in the selected site such as rose, gerbera, carnation, anthurium, liliun, orchids, chrysanthemum, etc.	-	-	-	-
<b>PC3.</b> set up structure for protected cultivation based on types of flower crop, conditions to be altered, output volumes, budgets and resources available, etc.	-	-	-	-
<b>PC4.</b> apply measures to test and alter the environmental conditions within the protected cultivation structure based on the requirements of the flower crop	-	-	-	-
<i>Prepare the growth media</i>	<b>4</b>	<b>8</b>	-	<b>5</b>
<b>PC5.</b> select appropriate soil or soilless medium for the flower crop	-	-	-	-
<b>PC6.</b> prepare the media to have appropriate pH, porosity, moisture retention, salinity, organic content and anchorage as required for the flower crop	-	-	-	-
<b>PC7.</b> decontaminate the media using methods such as chemical drenching/ fumigation, steaming, pasteurization and solarization	-	-	-	-
<i>Plant a flower crop</i>	<b>5</b>	<b>8</b>	-	<b>3</b>
<b>PC8.</b> ensure flat planting bed for flowers	-	-	-	-
<b>PC9.</b> select planting material like, seeds or saplings, tissue cultured plantlets based on the flower variety and planting medium	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> apply appropriate propagation method for the flower crop such as shield or T-budding, stenting method, cuttings, micro-propagation	-	-	-	-
<b>PC11.</b> prepare the planting material such as seeds, seedlings or cuttings	-	-	-	-
<b>PC12.</b> plant the planting material maintaining the right spacing to ensure optimum planting density	-	-	-	-
<i>Nurture a flower crop</i>	<b>10</b>	<b>15</b>	-	<b>7</b>
<b>PC13.</b> prepare daily/weekly irrigation and fertigation schedule as per the requirement of the crop	-	-	-	-
<b>PC14.</b> apply appropriate micro-irrigation techniques including use of fertigation equipment, spraying system, exhaust fan and cooling pads as per the stage of growth of the flower crop	-	-	-	-
<b>PC15.</b> ensure good quality of filtered water for flower crop	-	-	-	-
<b>PC16.</b> manage weeds using appropriate method	-	-	-	-
<b>PC17.</b> prepare and apply appropriate dose of manure fertilizer as per crop requirement	-	-	-	-
<b>PC18.</b> apply micro-nutrients by foliar spray	-	-	-	-
<b>PC19.</b> carry out centering (or decentering), to promote the growth of auxiliary buds and lateral branches as per the requirement of the plant using wired nets	-	-	-	-
<b>PC20.</b> trim the growing branches for further lateral branch formation, good spread and budding surface	-	-	-	-
<b>PC21.</b> prune and trim the terminal of the plants as per their cycle	-	-	-	-
<b>PC22.</b> carry out the plant management practices of pinching, disbudding, de-shooting, defoliation, removal of faded flowers and bending of shoots as per plant requirement	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC23.</b> identify indicators of disease, infestation, disorder and damage to the flower crop	-	-	-	-
<b>PC24.</b> apply appropriate measures for prevention and treatment of disease, infestation, disorder and damage to the flower crop	-	-	-	-
<i>Harvest a flower crop</i>	<b>7</b>	<b>10</b>	-	<b>6</b>
<b>PC25.</b> select appropriate harvesting practices of loose and cut flower	-	-	-	-
<b>PC26.</b> harvest the flowers as per the market requirement in terms of stage of harvest, stem length, bud size, quality and quantity of produce, type of packaging, etc.	-	-	-	-
<b>PC27.</b> pack the flowers for temporary storage	-	-	-	-
<b>PC28.</b> use weighing machine to accurately weigh the produce	-	-	-	-
<b>PC29.</b> sort and grade the harvested produce based on quality, colour, stem strength and size	-	-	-	-
<b>PC30.</b> process the segregated produce which are not meeting the quality standards	-	-	-	-
<b>PC31.</b> pack, store and transport the marketable produce, ensuring that the produce remains fresh and damage free for a long time	-	-	-	-
<b>PC32.</b> record the details of harvest and post-harvest activities in the desired format	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>45</b>	-	<b>25</b>



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N1013
<b>NOS Name</b>	Carry out protected cultivation of flower crops
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	Agriculture Crop Production
<b>Occupation</b>	Precision Farming
<b>NSQF Level</b>	4
<b>Credits</b>	3
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	31/08/2023
<b>Next Review Date</b>	31/08/2026
<b>NSQC Clearance Date</b>	31/08/2023

## 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 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 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.

## 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/N1009.Install and commission protected cultivation structure/s	30	40	-	30	100	20
AGR/N1010.Oversee the maintenance of the protected cultivation structure/s	30	35	-	35	100	20
AGR/N9908.Undertake basic entrepreneurial activities for small enterprise	30	40	-	30	100	10
AGR/N9903.Maintain health and safety at the workplace	40	25	-	35	100	5
DGT/VSQ/N0103.Employability Skills (90 Hours)	20	30	-	-	50	5
<b>Total</b>	<b>150</b>	<b>170</b>	<b>-</b>	<b>130</b>	<b>450</b>	<b>60</b>

#### Elective: 1 Hi-Tech Nursery Cultivation

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N1011.Set up and maintain nursery under protected condition	30	50	-	20	100	40
<b>Total</b>	<b>30</b>	<b>50</b>	<b>-</b>	<b>20</b>	<b>100</b>	<b>40</b>

## Qualification Pack

### Elective: 2 Vegetable Cultivation

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N1012.Carry out protected cultivation of vegetable crops	34	45	-	21	100	40
<b>Total</b>	<b>34</b>	<b>45</b>	<b>-</b>	<b>21</b>	<b>100</b>	<b>40</b>

### Elective: 3 Flower Cultivation

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N1013.Carry out protected cultivation of flower crops	30	45	-	25	100	40
<b>Total</b>	<b>30</b>	<b>45</b>	<b>-</b>	<b>25</b>	<b>100</b>	<b>40</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

## 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.