



Solar Pump Technician

QP Code: AGR/Q6701

Version: 2.0

NSQF Level: 4

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AGR/Q6701: Solar Pump Technician

Brief Job Description

A Solar Pump Technician performs various activities such as conducting site assessment and installing solar panel, battery, pump and plumbing system. The individual also carries out service and maintenance of the solar pump..

Personal Attributes

The individual must be able to think rationally and act independently to find appropriate solutions. The person must be physically fit and have stamina to work for long durations. Ability to solve problems and co-ordinate with others are other important attributes required in this role.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [AGR/N6701: Conduct site assessment and plan the solar pump installation](#)
2. [AGR/N6702: Install solar panel and battery](#)
3. [AGR/N6703: Install plumbing system and pump](#)
4. [AGR/N6705: Carry out maintenance and repair of solar pump](#)
5. [AGR/N9908: Undertake basic entrepreneurial activities for small enterprise](#)
6. [AGR/N9926: Follow the relevant employability and entrepreneurial practices](#)
7. [ELE/N9953: Ensure safety at workplace](#)

Qualification Pack (QP) Parameters

Sector	Agriculture
Sub-Sector	Forestry, Environment and Renewable Energy Management
Occupation	Renewable Energy Management
Country	India
NSQF Level	4

Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL
Minimum Educational Qualification & Experience	12th Class ((or I.T.I /Diploma in relevant field from recognized body) with 6 months relevant experience) OR 10th Class (with 2 Year of relevent experience OR 8th Class with 4 Years of relevant experience) OR Certificate-NSQF (Level-3(Greenhouse Operator/Farm Worker) with 2 Years of relevant experience)
Minimum Level of Education for Training in School	10th Class
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	20/04/2021
Next Review Date	30/12/2024
Deactivation Date	30/12/2024
NSQC Approval Date	30/12/2021
Version	2.0

AGR/N6701: Conduct site assessment and plan the solar pump installation

Description

This OS unit is about conducting a site visit to determine the site conditions and client requirements for the purpose of installing the solar pump.

Scope

The scope covers the following :

- Plan and conduct the site-visit
- Assess the site conditions and client requirements
- Plan the installation
- Arrange the resources required for the installation

Elements and Performance Criteria

Plan and conduct the site-visit

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

- PC1. co-ordinate with the relevant personnel to get the client's address, contact details and any other relevant information prior to the site-visit
- PC2. plan the site visit in a way to accommodate other daily assignments
- PC3. follow the business code of conduct during the site visit and in dealing with the customer

Assess the site conditions and client requirements

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

- PC4. conduct a site survey to check soil type, land surface and exposure to sunlight
- PC5. select a spot near the water source, with good sunlight exposure and suitable for the underground battery compartment
- PC6. evaluate the client's requirements and preferences

Plan the installation

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

- PC7. select the appropriate mounting structure, foundation design and mounting accessories
- PC8. explain any construction requirements to the client before solar pump installation
- PC9. prepare a plan for the installation and share the cost estimates with the client

Arrange the resources required for the installation

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

- PC10. arrange the necessary funds for procuring material for installation
- PC11. identify vendors who sell the required material
- PC12. procure material for the installation of solar pump
- PC13. arrange for safe handling and storage of the procured material

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. the business code of conduct to be followed during the site-visit and in client dealing
- KU2. the importance of ascertaining the work requirements prior to visiting the client
- KU3. various parameters to assess an ideal spot for the installation of a solar pump
- KU4. appropriate mounting structure, foundation design and mounting accessories for a solar pump
- KU5. planning and cost estimation for solar pump installation
- KU6. various resources required for the installation of a solar pump along with their safe handling and storage

Generic Skills (GS)

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

- GS1. read the relevant literature to get updated information about the field of work
- GS2. write work-related notes
- GS3. communicate politely and professionally
- GS4. take quick decisions to deal with workplace emergencies/ accidents
- GS5. identify likely problems in the work processes and take appropriate preventive action
- GS6. listen attentively to understand the information/ instructions being given
- GS7. evaluate all possible solutions to a problem to select the best one
- GS8. identify areas of customer dissatisfaction and take appropriate action to enhance customer satisfaction
- GS9. co-ordinate with the co-workers to achieve the work objectives

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Plan and conduct the site-visit</i>	7	10	-	10
PC1. co-ordinate with the relevant personnel to get the client's address, contact details and any other relevant information prior to the site-visit	-	-	-	-
PC2. plan the site visit in a way to accommodate other daily assignments	-	-	-	-
PC3. follow the business code of conduct during the site visit and in dealing with the customer	-	-	-	-
<i>Assess the site conditions and client requirements</i>	8	10	-	10
PC4. conduct a site survey to check soil type, land surface and exposure to sunlight	-	-	-	-
PC5. select a spot near the water source, with good sunlight exposure and suitable for the underground battery compartment	-	-	-	-
PC6. evaluate the client's requirements and preferences	-	-	-	-
<i>Plan the installation</i>	5	5	-	5
PC7. select the appropriate mounting structure, foundation design and mounting accessories	-	-	-	-
PC8. explain any construction requirements to the client before solar pump installation	-	-	-	-
PC9. prepare a plan for the installation and share the cost estimates with the client	-	-	-	-
<i>Arrange the resources required for the installation</i>	10	15	-	5
PC10. arrange the necessary funds for procuring material for installation	-	-	-	-
PC11. identify vendors who sell the required material	-	-	-	-
PC12. procure material for the installation of solar pump	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. arrange for safe handling and storage of the procured material	-	-	-	-
NOS Total	30	40	-	30

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N6701
NOS Name	Conduct site assessment and plan the solar pump installation
Sector	Agriculture
Sub-Sector	Forestry, Environment and Renewable Energy Management
Occupation	Renewable Energy Management
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	NA
Next Review Date	NA
Deactivation Date	NA
NSQC Clearance Date	NA

AGR/N6702: Install solar panel and battery

Description

This OS unit is about performing various activities during the installation of a solar pump

Scope

The scope covers the following :

- Prepare for the installation
- Carry out the installation
- Complete after-installation formalities

Elements and Performance Criteria

Prepare for the installation

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

- PC1. prepare the required installation material, accessories, tools, equipment and Personal Protective Equipment (PPE) for the installation
- PC2. test the Photo-Voltaic (PV) module for any defects and live current before installation

Carry out the installation

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

- PC3. assess the degree of inclination and angle of tilt of PV module
- PC4. select a mounting place/pole that is strong enough to withstand different weather conditions
- PC5. carry out mounting of PV in a manner that it is able to absorb maximum solar power
- PC6. apply cover on the module and junction box during installation
- PC7. install solar cable, plugs and spare fuse and the solar panels firmly
- PC8. place battery inside the battery compartment safely
- PC9. connect the system to battery using the recommended grade of cables
- PC10. check the battery for charging
- PC11. test the system voltage
- PC12. apply the necessary adjustments to match output requirement
- PC13. conduct a test to ensure the solar pump is functioning as expected

Complete after-installation formalities

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

- PC14. remove any waste material from the installation site after completing installation
- PC15. brief the client on the basic cleaning and maintenance of solar panels
- PC16. complete the necessary documentation as per the (SOP)

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. applicable documentation requirements

- KU2. use of the relevant PPE
- KU3. various material and accessories required for the installation of a solar pump
- KU4. correct use of the relevant tools and equipment such as screwdriver, inspection fixtures, wire cutter, pliers, tester, spanner, voltmeter, ammeter, watermeter, compass, etc.
- KU5. testing of the Photo-Voltaic (PV) module for any defects and live current before installation
- KU6. how to assess the degree of inclination and angle of tilt of the PV module
- KU7. correct mounting of PV to allow it absorb maximum solar power
- KU8. the process of installation of solar cable, plugs, spare fuse, solar panels and battery
- KU9. testing of battery and system voltage
- KU10. the importance of leaving a clean site after completing the solar pump installation

Generic Skills (GS)

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

- GS1. write work-related notes and prepare relevant documents
- GS2. read relevant guides and policy documents
- GS3. plan and schedule daily tasks to achieve work-efficiency
- GS4. listen attentively to understand the information/ instructions being given
- GS5. communicate politely and professionally
- GS6. take quick decisions to deal with workplace emergencies/ accidents
- GS7. detect process disruptions and delays and take preventive measures

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for the installation</i>	8	10	-	10
PC1. prepare the required installation material, accessories, tools, equipment and Personal Protective Equipment (PPE) for the installation	-	-	-	-
PC2. test the Photo-Voltaic (PV) module for any defects and live current before installation	-	-	-	-
<i>Carry out the installation</i>	15	20	-	10
PC3. assess the degree of inclination and angle of tilt of PV module	-	-	-	-
PC4. select a mounting place/pole that is strong enough to withstand different weather conditions	-	-	-	-
PC5. carry out mounting of PV in a manner that it is able to absorb maximum solar power	-	-	-	-
PC6. apply cover on the module and junction box during installation	-	-	-	-
PC7. install solar cable, plugs and spare fuse and the solar panels firmly	-	-	-	-
PC8. place battery inside the battery compartment safely	-	-	-	-
PC9. connect the system to battery using the recommended grade of cables	-	-	-	-
PC10. check the battery for charging	-	-	-	-
PC11. test the system voltage	-	-	-	-
PC12. apply the necessary adjustments to match output requirement	-	-	-	-
PC13. conduct a test to ensure the solar pump is functioning as expected	-	-	-	-
<i>Complete after-installation formalities</i>	7	10	-	10
PC14. remove any waste material from the installation site after completing installation	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. brief the client on the basic cleaning and maintenance of solar panels	-	-	-	-
PC16. complete the necessary documentation as per the (SOP)	-	-	-	-
NOS Total	30	40	-	30

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N6702
NOS Name	Install solar panel and battery
Sector	Agriculture
Sub-Sector	Forestry, Environment and Renewable Energy Management
Occupation	Renewable Energy Management
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	NA
Next Review Date	NA
Deactivation Date	NA
NSQC Clearance Date	NA

AGR/N6703: Install plumbing system and pump

Description

This OS unit is about installation of plumbing system and pump.

Scope

The scope covers the following :

- Install the pipes
- Install the pump
- Guide the farmers
- Optimise resource utilisation
- Perform waste management
- Practice inclusion at work

Elements and Performance Criteria

Install the pipes

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

- PC1. assemble pipe sections, fittings and tubing
- PC2. cut, thread and join pipes as per SOP
- PC3. create openings in the pipes as per the requirement
- PC4. install plumbing fittings and fixtures such as valves, clamps, elbows, sprinklers, taps, etc.
- PC5. use the relevant power and hand tools during the installation

Install the pump

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

- PC6. connect the pump to the battery or inverter according to the type of pump
- PC7. connect pipes to the pump from the source to the destination of supply
- PC8. adjust the discharge of water as per the requirement

Guide the farmers

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

- PC9. guide the farmers on ways to deal with common hazards associated with the use of solar pump and panels
- PC10. conduct session with the farmers to guide them on minor repair and maintenance of the solar pump and panels

Optimise resource utilisation

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

- PC11. plug water leakages to prevent its wastage
- PC12. optimise the usage of water, electricity and relevant materials in various tasks and processes
- PC13. connect the electrical equipment safely and turn them off when not in use

Perform waste management

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

- PC14. segregate waste into different categories

PC15. dispose the non-recyclable waste appropriately

PC16. deposit the recyclable and reusable materials at the identified location

Practice inclusion at work

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

PC17. adopt gender-neutral behaviour at work

PC18. empathise with Persons with Disabilities (PwD)

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. pipe sections, fittings and tubings required for installing a plumbing system

KU2. installation of plumbing fittings and fixtures such as valves, clamps, elbows, sprinklers, taps, etc.

KU3. different methods of cutting, bending and joining fittings and fixtures

KU4. relevant hand and power tools such as wrenches, pliers, screwdriver, power drill, pipe cutter,

KU5. how to connect the pump to the battery or inverter according to the type of pump

KU6. the process of connecting pipes with the pump from the source to the destination of supply

KU7. how to adjust the discharge of water

KU8. the importance of following environmental and ecological best practices to minimise the impact on the environment

KU9. how to guide farmers regarding the hazards associated with the use of solar pumps and panels

KU10. along with their minor repair and maintenance

KU11. benefits of resource optimisation

KU12. ways of efficiently managing material and water in the process

KU13. basics of electricity and prevalent energy efficient devices

KU14. ways to recognize common electrical problems

KU15. common practices of conserving electricity

KU16. different methods of recycling and disposing different types of waste

KU17. common sources of pollution and ways to minimise it

KU18. the need for gender sensitisation and the consequences of gendered behaviour

KU19. different types of disabilities and the challenges faced by PwD

KU20. the importance of displaying empathy towards PwD and following the recommended inclusive practices at work

Generic Skills (GS)

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

GS1. write work-related notes

GS2. communicate politely and professionally

GS3. read the relevant literature to learn about new latest developments in the field of work

- GS4. listen attentively to understand the information/ instructions being shared by the speaker
- GS5. plan and prioritise tasks to ensure timely completion
- GS6. co-ordinate with co-workers to achieve work objectives
- GS7. evaluate all possible solutions to a problem to select the best one
- GS8. identify possible disruptions to work and take appropriate preventive measures
- GS9. take quick decisions to deal with workplace emergencies/ accidents

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Install the pipes</i>	5	10	-	5
PC1. assemble pipe sections, fittings and tubing	-	-	-	-
PC2. cut, thread and join pipes as per SOP	-	-	-	-
PC3. create openings in the pipes as per the requirement	-	-	-	-
PC4. install plumbing fittings and fixtures such as valves, clamps, elbows, sprinklers, taps, etc.	-	-	-	-
PC5. use the relevant power and hand tools during the installation	-	-	-	-
<i>Install the pump</i>	8	5	-	8
PC6. connect the pump to the battery or inverter according to the type of pump	-	-	-	-
PC7. connect pipes to the pump from the source to the destination of supply	-	-	-	-
PC8. adjust the discharge of water as per the requirement	-	-	-	-
<i>Guide the farmers</i>	2	5	-	2
PC9. guide the farmers on ways to deal with common hazards associated with the use of solar pump and panels	-	-	-	-
PC10. conduct session with the farmers to guide them on minor repair and maintenance of the solar pump and panels	-	-	-	-
<i>Optimise resource utilisation</i>	5	10	-	5
PC11. plug water leakages to prevent its wastage	-	-	-	-
PC12. optimise the usage of water, electricity and relevant materials in various tasks and processes	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. connect the electrical equipment safely and turn them off when not in use	-	-	-	-
<i>Perform waste management</i>	5	5	-	5
PC14. segregate waste into different categories	-	-	-	-
PC15. dispose the non-recyclable waste appropriately	-	-	-	-
PC16. deposit the recyclable and reusable materials at the identified location	-	-	-	-
<i>Practice inclusion at work</i>	5	5	-	5
PC17. adopt gender-neutral behaviour at work	-	-	-	-
PC18. empathise with Persons with Disabilities (PwD)	-	-	-	-
NOS Total	30	40	-	30

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N6703
NOS Name	Install plumbing system and pump
Sector	Agriculture
Sub-Sector	Forestry, Environment and Renewable Energy Management
Occupation	Renewable Energy Management
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	NA
Next Review Date	NA
Deactivation Date	NA
NSQC Clearance Date	NA

AGR/N6705: Carry out maintenance and repair of solar pump

Description

This OS unit is about carrying out maintenance and repair services for a solar pump installation.

Scope

The scope covers the following :

- Carry out maintenance and repair
- Maintain records and schedule the maintenance

Elements and Performance Criteria

Carry out maintenance and repair

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

- PC1. inspect the installation visually and using diagnostic tools
- PC2. identify any malfunctions and repair requirements basis the diagnosis
- PC3. clean the relevant components of the solar pump
- PC4. check the electrical joints and pipes for any loose connections
- PC5. examine the insulations of wires for any short circuits
- PC6. check the plumbing system for any blockages, water level and pump issues
- PC7. ensure the voltage being generated is correct as per the installation requirements
- PC8. replace any faulty components as per the Standard Operating Procedure (SOP)
- PC9. integrate all the components as per the original design after maintenance

Maintain records and schedule the maintenance

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

- PC10. maintain the record of maintenance and repair services carried out
- PC11. schedule the next maintenance as per the maintenance schedule

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. applicable record-keeping requirements
- KU2. inspection of a solar pump installation
- KU3. use of relevant diagnostic/ maintenance/ repair tools and equipment
- KU4. safe method of cleaning various components of a solar pump
- KU5. the process of examining the insulation of wires to prevent any short circuits and electricity hazards
- KU6. common faults with the plumbing system such as blockages and pump-related issues and how to fix them
- KU7. how to test the voltage being generated by the solar pump

KU8. approved spare parts to be used with a solar pump

KU9. recommended maintenance schedule for a solar pump

Generic Skills (GS)

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

GS1. maintain work-related records

GS2. read and follow the health and safety instructions

GS3. listen attentively to understand the information/ instructions being shared by the speaker

GS4. communicate clearly and politely with co-workers and clients

GS5. plan and prioritise tasks to ensure timely completion

GS6. identify possible disruptions to work and take appropriate preventive measures

GS7. take quick decisions to deal with workplace emergencies/ accidents

GS8. evaluate all possible solutions to a problem to select the best one

GS9. co-ordinate with the co-workers to achieve the work objectives

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carry out maintenance and repair</i>	20	25	-	20
PC1. inspect the installation visually and using diagnostic tools	-	-	-	-
PC2. identify any malfunctions and repair requirements basis the diagnosis	-	-	-	-
PC3. clean the relevant components of the solar pump	-	-	-	-
PC4. check the electrical joints and pipes for any loose connections	-	-	-	-
PC5. examine the insulations of wires for any short circuits	-	-	-	-
PC6. check the plumbing system for any blockages, water level and pump issues	-	-	-	-
PC7. ensure the voltage being generated is correct as per the installation requirements	-	-	-	-
PC8. replace any faulty components as per the Standard Operating Procedure (SOP)	-	-	-	-
PC9. integrate all the components as per the original design after maintenance	-	-	-	-
<i>Maintain records and schedule the maintenance</i>	10	15	-	10
PC10. maintain the record of maintenance and repair services carried out	-	-	-	-
PC11. schedule the next maintenance as per the maintenance schedule	-	-	-	-
NOS Total	30	40	-	30

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N6705
NOS Name	Carry out maintenance and repair of solar pump
Sector	Agriculture
Sub-Sector	Forestry, Environment and Renewable Energy Management
Occupation	Renewable Energy Management
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	NA
Next Review Date	NA
Deactivation Date	NA
NSQC Clearance Date	NA

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.

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
- 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

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Plan the agricultural enterprise/ business</i>	10	14	-	10
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	-	-	-	-
<i>Manage the agricultural production process</i>	8	10	-	8
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	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
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.	-	-	-	-
<i>Manage the post-production and marketing processes</i>	12	16	-	12
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	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
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	-	-	-	-
NOS Total	30	40	-	30

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N9908
NOS Name	Undertake basic entrepreneurial activities for small enterprise
Sector	Agriculture
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	NA
Next Review Date	21/12/2024
Deactivation Date	21/12/2024
NSQC Clearance Date	NA

AGR/N9926: Follow the relevant employability and entrepreneurial practices

Description

This OS unit is about following the relevant employability and entrepreneurial practices. It also covers the use of the computer, banking, insurance and various electronic services.

Scope

The scope covers the following :

- Follow the employability practices
- Use computer and relevant electronic services
- Follow the entrepreneurial practices

Elements and Performance Criteria

Follow the employability practices

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

- PC1. prepare a resume including all the relevant information
- PC2. prepare answers to frequently asked interview questions
- PC3. follow the recommended practices to prevent and deal with common health and safety issues
- PC4. maintain a positive attitude towards work and co-workers
- PC5. carry out workplace duties as per the applicable quality standards, ensuring honesty in all the activities
- PC6. apply the appropriate techniques for effective listening and speaking
- PC7. follow the applicable time schedules and time management practices for effective utilisation of time
- PC8. assist in identifying and implementing relevant creative solutions to resolve work-related issues
- PC9. set up a bank account and personal insurance policy
- PC10. implement the recommended anger and stress management practices to ensure a collaborative and stress-free environment at work

Use computer and relevant electronic services

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

- PC11. set up a computer and relevant accessories/ peripherals for use according to the manufacturer's instructions
- PC12. use the computer with the relevant software or applications to achieve work efficiency
- PC13. maintain various work-related records electronically using the computer
- PC14. maintain separate records of fixed and variable business costs
- PC15. undertake business communications using email service
- PC16. carry out commercial activities such as buying and selling of commodities using the appropriate e-commerce platforms

PC17. process payments using the relevant e-payment method

Follow the entrepreneurial practices

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

PC18. set up a bank account with the required facilities to conduct business transactions

PC19. follow the recommended practices to utilise business funds effectively

PC20. invest in appropriate funds

PC21. use the relevant personal and business insurance services

PC22. follow the relevant tax laws to ensure timely payment of relevant taxes and filing of Income Tax Return (ITR)

PC23. follow the recommended practices to ensure effective team building at work

PC24. identify and implement appropriate and cost-effective solutions to work-related problems

PC25. carry out outreach programs to expand business

PC26. follow the Make in India campaign to use, manufacture and promote products made in the country

PC27. utilise the relevant government programs and schemes for entrepreneurs

PC28. follow the recommended practices for a stable enterprise, managing the relevant risks

PC29. review the business account regularly to ensure the profitability of the business

PC30. follow with Maslow's Hierarchy of Needs theory to create motivation at work

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the recommended practices to be followed to prevent and deal with common health and safety issues at work

KU2. the Maslow's Hierarchy of Needs theory and its application at work

KU3. various characteristics of entrepreneurs with the motivation for achievement

KU4. the appropriate practices to be followed to maintain a positive attitude at work

KU5. the role of attitude in self-analysis

KU6. how to utilise personal strengths at work and overcome weaknesses

KU7. the importance of conducting work/business with honesty

KU8. the importance of maintaining the required quality standards in work

KU9. the characteristics of highly creative and innovative people

KU10. how to find creative solutions to work-related problems

KU11. the benefits of time management and the relevant practices to be followed for effective utilisation of time

KU12. the relevant practices to be followed for anger and stress management at work

KU13. how to set up a computer and relevant accessories/ peripherals for use

KU14. use of relevant computer software/ applications for various purposes

KU15. the benefits of maintaining electronic records using a computer

KU16. Digital India campaign, and the modes and benefits of carrying out business transactions digitally

KU17. the benefits and use of email communication services

- KU18. use of various e-commerce platforms and e-payment methods
- KU19. different types of bank accounts and their benefits
- KU20. the process of registering for a bank account for personal or business use
- KU21. the importance and methods of saving money
- KU22. difference between fixed and variable business costs
- KU23. the importance of making investments and different types of investment options available
- KU24. different types of insurance products and the importance of availing personal and business insurance
- KU25. use and benefits of online banking
- KU26. how to prepare a resume and the relevant information to be included in it
- KU27. frequently asked interview questions and how to answer them appropriately
- KU28. basic workplace terminology
- KU29. the recommended practices to be followed to ensure effective team building at work
- KU30. the appropriate techniques for effective listening and speaking
- KU31. the process of identifying and implementing appropriate and cost-effective solutions to work-related problems
- KU32. the process of carrying out outreach programs to expand business
- KU33. Make in India campaign to promote products made in the country
- KU34. relevant government programs and schemes for entrepreneurs
- KU35. the recommended practices to be followed for a stable enterprise
- KU36. the importance and process of reviewing the business account regularly to ensure the profitability of the business
- KU37. the concept and significance of entrepreneurship
- KU38. the entrepreneurship ecosystem
- KU39. different types of entrepreneurs and their characteristics
- KU40. the qualities of an effective leader and the benefits of effective leadership
- KU41. appropriate practices to be followed to build a strong team of professionals working towards a common goal
- KU42. how to identify new business opportunities within a business
- KU43. the relationship between entrepreneurship, risk appetite, and resilience
- KU44. different techniques of deal with failure effectively

Generic Skills (GS)

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

- GS1. maintain work-related notes and records
- GS2. communicate politely and professionally
- GS3. listen attentively to understand the information being shared
- GS4. read the relevant literature to earn about the latest developments in the field of work
- GS5. co-ordinate with the co-workers and stakeholders to achieve the work objectives
- GS6. plan and prioritise tasks to ensure timely completion
- GS7. take quick decisions to deal with workplace emergencies

GS8. evaluate all possible solutions to a problem to select the best one

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Follow the employability practices</i>	10	20	-	10
PC1. prepare a resume including all the relevant information	-	-	-	-
PC2. prepare answers to frequently asked interview questions	-	-	-	-
PC3. follow the recommended practices to prevent and deal with common health and safety issues	-	-	-	-
PC4. maintain a positive attitude towards work and co-workers	-	-	-	-
PC5. carry out workplace duties as per the applicable quality standards, ensuring honesty in all the activities	-	-	-	-
PC6. apply the appropriate techniques for effective listening and speaking	-	-	-	-
PC7. follow the applicable time schedules and time management practices for effective utilisation of time	-	-	-	-
PC8. assist in identifying and implementing relevant creative solutions to resolve work-related issues	-	-	-	-
PC9. set up a bank account and personal insurance policy	-	-	-	-
PC10. implement the recommended anger and stress management practices to ensure a collaborative and stress-free environment at work	-	-	-	-
<i>Use computer and relevant electronic services</i>	8	10	-	8
PC11. set up a computer and relevant accessories/ peripherals for use according to the manufacturer's instructions	-	-	-	-
PC12. use the computer with the relevant software or applications to achieve work efficiency	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. maintain various work-related records electronically using the computer	-	-	-	-
PC14. maintain separate records of fixed and variable business costs	-	-	-	-
PC15. undertake business communications using email service	-	-	-	-
PC16. carry out commercial activities such as buying and selling of commodities using the appropriate e-commerce platforms	-	-	-	-
PC17. process payments using the relevant e-payment method	-	-	-	-
<i>Follow the entrepreneurial practices</i>	12	10	-	12
PC18. set up a bank account with the required facilities to conduct business transactions	-	-	-	-
PC19. follow the recommended practices to utilise business funds effectively	-	-	-	-
PC20. invest in appropriate funds	-	-	-	-
PC21. use the relevant personal and business insurance services	-	-	-	-
PC22. follow the relevant tax laws to ensure timely payment of relevant taxes and filing of Income Tax Return (ITR)	-	-	-	-
PC23. follow the recommended practices to ensure effective team building at work	-	-	-	-
PC24. identify and implement appropriate and cost-effective solutions to work-related problems	-	-	-	-
PC25. carry out outreach programs to expand business	-	-	-	-
PC26. follow the Make in India campaign to use, manufacturer and promote products made in the country	-	-	-	-
PC27. utilise the relevant government programs and schemes for entrepreneurs	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC28. follow the recommended practices for a stable enterprise, managing the relevant risks	-	-	-	-
PC29. review the business account regularly to ensure the profitability of the business	-	-	-	-
PC30. follow with Maslow's Hierarchy of Needs theory to create motivation at work	-	-	-	-
NOS Total	30	40	-	30

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N9926
NOS Name	Follow the relevant employability and entrepreneurial practices
Sector	Agriculture
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	NA
Next Review Date	21/12/2024
Deactivation Date	21/12/2024
NSQC Clearance Date	NA

ELE/N9953: Ensure safety at workplace

Description

This OS unit is about maintaining safety in the workplace and avoid any work related hazards.

Scope

This unit/ task covers the following:

- Follow standard safety procedures while handling an equipment
- Participate in company's safety drills and workshops

Elements and Performance Criteria

Following safety measures

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

- PC1. comply with safety procedures followed in the company
- PC2. take adequate safety measures while handling hazardous materials or tools
- PC3. take necessary measures while handling electrical equipment
- PC4. escalate matters about hazardous materials or things found in the premises
- PC5. follow appropriate material handling procedures to avoid any damages and injuries
- PC6. use safety materials such as gloves, goggles, masks, helmets, etc.
- PC7. adequate safety measures while on work to prevent accidents
- PC8. ensure zero accidents in work
- PC9. avoid damage of components due to negligence in ESD procedures
- PC10. ensure no loss for company due to safety negligence

Participating in drills and workshops

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

- PC11. participate in regular safety drills for being prepared in the event of a fire or natural calamity
- PC12. help others during the drill or calamity
- PC13. administer basic first aid
- PC14. participate in company organised games and fitness sessions such as yoga, etc.
- PC15. develop good posture for working so that long term health problems do not arise

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. companys policies on: incentives, delivery standards, and personnel management
- KU2. company occupational safety and health policy followed
- KU3. company emergency evacuation procedure
- KU4. companys medical policy
- KU5. how to maintain the work area safe and secure

- KU6. how to handle hazardous material
- KU7. how to operate hazardous tools and equipment
- KU8. emergency procedures to be followed such as fire accidents, etc.

Generic Skills (GS)

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

- GS1. the purpose of using safety materials such as gloves, etc.
- GS2. how to use safety equipment such as fire extinguisher during fire accidents

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Following safety measures</i>	20	30	-	-
PC1. comply with safety procedures followed in the company	2	3	-	-
PC2. take adequate safety measures while handling hazardous materials or tools	2	3	-	-
PC3. take necessary measures while handling electrical equipment	2	3	-	-
PC4. escalate matters about hazardous materials or things found in the premises	2	3	-	-
PC5. follow appropriate material handling procedures to avoid any damages and injuries	2	3	-	-
PC6. use safety materials such as gloves, goggles, masks, helmets, etc.	2	3	-	-
PC7. adequate safety measures while on work to prevent accidents	2	3	-	-
PC8. ensure zero accidents in work	2	3	-	-
PC9. avoid damage of components due to negligence in ESD procedures	2	3	-	-
PC10. ensure no loss for company due to safety negligence	2	3	-	-
<i>Participating in drills and workshops</i>	20	30	-	-
PC11. participate in regular safety drills for being prepared in the event of a fire or natural calamity	4	6	-	-
PC12. help others during the drill or calamity	4	6	-	-
PC13. administer basic first aid	4	6	-	-
PC14. participate in company organised games and fitness sessions such as yoga, etc.	4	6	-	-
PC15. develop good posture for working so that long term health problems do not arise	4	6	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	40	60	-	-

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N9953
NOS Name	Ensure safety at workplace
Sector	Electronics
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	NA
Version	1.0
Last Reviewed Date	24/03/2014
Next Review Date	31/03/2022
Deactivation Date	31/03/2022
NSQC Clearance Date	NA

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) (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. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
5. In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.
6. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

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

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N6701. Conduct site assessment and plan the solar pump installation	30	40	0	30	100	22
AGR/N6702. Install solar panel and battery	30	40	0	30	100	24
AGR/N6703. Install plumbing system and pump	30	40	0	30	100	24
AGR/N6705. Carry out maintenance and repair of solar pump	30	40	0	30	100	15
AGR/N9908. Undertake basic entrepreneurial activities for small enterprise	30	40	-	30	100	5
AGR/N9926. Follow the relevant employability and entrepreneurial practices	30	40	-	30	100	5
ELE/N9953. Ensure safety at workplace	40	60	-	-	100	5
Total	220	300	-	180	700	100

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Glossary

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

Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.