



Model Curriculum

QP Name: Plant Tissue Culture Technician

QP Code: AGR/Q8101

Version: 4.0

NSQF Level: 4

Model Curriculum Version: 3.0

Agriculture Skill Council of India || Agriculture Skill Council of India (ASCI), 6th Floor, GNG Tower, Plot No. 10, Sector – 44

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Training Parameters

Sector	Agriculture
Sub-Sector	Agriculture Industries
Occupation	Research & Development (Agricultural Technicians, Others)
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3142.9900
Minimum Educational Qualification and Experience	12 or equivalent (Science) OR 10th Grade Pass with 3-year relevant experience OR Previous relevant Qualification of NSQF Level 3.5 with 1.5-year relevant experience in Agriculture and allied sectors OR Previous relevant Qualification of NSQF Level 3.0 with 3- year relevant experience in Agriculture and allied sectors
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	30/05/2024
Next Review Date	30/11/2024
NSQC Approval Date	30/05/2024

QP Version	4.0
Model Curriculum Creation Date	30/05/2024
Model Curriculum Valid Up to Date	30/11/2024
Model Curriculum Version	3.0
Minimum Duration of the Course	390 Hours
Maximum Duration of the Course	390 Hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills to:

- Describe the process of preparing the lab and relevant lab equipment for plant tissue culture.
- Demonstrate the process of carrying out plant tissue culture under a controlled environment in a lab.
- Demonstrate the process of transplanting the tissue cultured plants.
- Explain the importance of maintaining the record of various lab operations carried out during plant tissue culture.
- Explain the importance of following various inclusive practices for all genders and Persons with Disabilities (PwD) at work.
- Demonstrate various practices to maintain personal hygiene, cleanliness, and safety at the work.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/N8102 Prepare for plant tissue culture NOS Version- 2.0 NSQF Level- 4	25:00	35:00	0:00	0:00	60:00
Module 1: Introduction to the role of a Plant Tissue Culture Technician	5:00	0:00	0:00	0:00	5:00
Module 2: Preparation for plant tissue culture	20:00	35:00	0:00	0:00	55:00
AGR/N8103 Carry out plant tissue culture NOS Version- 2.0 NSQF Level- 4	20:00	40:00	0:00	0:00	60:00
Module 3: Propagation of plants through plant tissue culture	20:00	40:00	0:00	0:00	60:00

AGR/N8115 Transplant the tissue cultured plants and maintain records NOS Version- 1.0 NSQF Level- 4	30:00	30:00	0:00	0:00	60:00
Module 4: Transplantation of the tissue cultured plants and record-keeping	30:00	30:00	0:00	0:00	60:00
AGR/N9903 Maintain health and safety at the workplace NOS Version- 3.0 NSQF Level-4	15:00	15:00	0:00	0:00	30:00
Module 5: Hygiene and cleanliness	5:00	5:00	0:00	0:00	10:00
Module 6: Safety and emergency procedures	10:00	10:00	0:00	0:00	20:00
DGT/VSQ/N0102 Employability Skills NOS Version-1.0 NSQF Level-4	60:00	00:00	0:00	0:00	60:00
Module 7: Employability Skills	60:00	00:00	0:00	0:00	60:00
Module 8: OJT	00:00	00:00	120:00	0:00	120:00
Total Duration	150:00	120:00	120:00	0:00	390:00

Module Details

Module 1: Introduction to the role of a Plant Tissue Culture Technician

Bridge Module, Mapped to AGR/N8102 v2.0

Terminal Outcomes:

- State the role and responsibilities of a Plant Tissue Culture Technician.

Duration: 5:00	Duration: 0:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the size and scope of the agriculture industry and its sub-sectors. • Discuss the role and responsibilities of a Plant Tissue Culture Technician. • Identify various employment opportunities for a Plant Tissue Culture Technician. 	
Classroom Aids	
Training kit - Trainer guide, presentations, whiteboard, marker, projector, laptop, video films	
Tools, Equipment and Other Requirements	
NA	

Module 2: Preparation for plant tissue culture

Mapped to AGR/N8102 v2.0

Terminal Outcomes:

- Describe the process of preparing the lab and lab equipment for plant tissue culture.
- Demonstrate the process of preparing, sterilising and storing the plant tissue culture medium.

Duration: 20:00	Duration: 35:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the importance of carrying out plant tissue culture. • List various lab equipment and Personal Protective Equipment (PPE) required for plant tissue culture. • Explain the importance of sterilising the lab and lab equipment. • Describe the process of disposing expired chemicals and solutions safely. • Describe the process of calibrating and maintaining various lab equipment. • Explain the importance of carrying out regular maintenance of lab equipment. • Describe basic lab inventory management practices. • List different types of culture medium used in plant tissue culture and the ingredients used to prepare them. • Describe the process of identifying the appropriate culture medium along with its nature, composition, and suitability for the different types of explants. • Describe the process of preparing the culture medium. • Explain the process of adjusting the plant tissue culture medium's Potential of Hydrogen (pH). • Describe the process of sterilising and storing the culture medium. 	<ul style="list-style-type: none"> • Demonstrate the process of sterilising the lab and lab equipment. • Demonstrate the use of relevant PPE. • Show how to calibrate various lab equipment according to the tolerance prescribed by the manufacturer. • Prepare a sample record regarding the performance, faults, repair, and annual maintenance of lab equipment. • Demonstrate the process of preparing different stock solutions as the nutrient medium with the required constituents, strength, and volume. • Demonstrate the process of different types of culture medium such as MS, B5, N6, Nitsch, and Whites. • Show how to dispense medium uniformly into culture bottles/ tubes manually or with the help of an automatic media dispenser. • Prepare a sample record of prepared culture medium in the media register or relevant computer system. • Show how to sterilise the media at the prescribed temperature and pressure. • Demonstrate the process of carrying out filtration sterilisation of the stock solutions through a syntax filter. • Show how to check the culture medium for microbial contamination after autoclaving.
Classroom Aids	
Training kit (Trainer guide, Presentations). Whiteboard, Marker, projector, laptop	
Tools, Equipment and Other Requirements	
Blotting paper, trays/paper dishes, labels, plastic bag, pipettes, burettes, and volumetric glassware, laminar airflow, spirit lamp, inoculation loops, incubators, Autoclave, chemicals/ media/ reagent, Refrigerator.	

Module 3: Propagation of plants through plant tissue culture

Mapped to ARG/N8103 v2.0

Terminal Outcomes:

- Describe the process of preparing the mother plant and explant and transferring the explant to the culture medium.
- Demonstrate the process of preparing the mother plant and explant, and transferring the explant to the culture medium.
- Demonstrate the process of acclimatising the tissue cultured plants.

Duration: 20:00	Duration: 40:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List different types of crops, fruits and vegetables suitable for plant propagation. • Explain the criteria for selecting a mother plant. • Describe the process of pre-treating and preparing the mother plant to extract explants. • Describe the various techniques in plant tissue culture and their applications. • Explain the process of extracting explant from the sterilised mother plant. • Describe the process of preparing and transferring an explant to the culture medium. • Describe the importance and process of acclimatising cultured plants. 	<ul style="list-style-type: none"> • Demonstrate the process of pre-treating the mother plant using the recommended fungicides to prevent bacterial contamination. • Demonstrate the use of relevant tools to extract explant from the mother plant. • Show how to sterilise the explant using the prescribed sterilisation solution and transfer it into the culture medium using sterilised forceps. • Show how to sterilise the relevant equipment and containers using an alcohol-based disinfectant. • Demonstrate the process of applying the necessary treatment to resolve any issues with root development. • Prepare a sample record of observations in the physical register or the relevant computer application. • Demonstrate the process of planting the tissue cultured plants in micro-pots filled with soil/ soilrite/ sand for primary hardening. • Demonstrate the process of transferring the plants to larger pots for secondary hardening after they develop new leaves and roots. • Show how to assess the growth of plantlets and detect the presence of any infections.
Classroom Aids	
Training kit (Trainer guide, Presentations). Whiteboard, Marker, projector, laptop	
Tools, Equipment and Other Requirements	
Labware, cardboard boxes, part of the plant to be used, chemicals, Microscope, Laminar air flow, disinfectants, Parafilm/cotton plug, greenhouse or shade net	

Module 4: Transplantation of the tissue cultured plants and record-keeping

Mapped to AGR/N8115 v1.0

Terminal Outcomes:

- Describe the process of transplanting the tissue cultured plants.
- Demonstrate the process of transplanting the tissue cultured plants.
- Demonstrate various practices for the effective use of resources and disposal of waste.

Duration: 30:00	Duration: 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the method of transplanting the tissue cultured plants in an open space or greenhouse. • List various materials required for transplanting tissue cultured plants. • Identify the appropriate conditions for transplanting the acclimatised and established plants to larger pots or greenhouse conditions. • Describe various practices for protecting the transplanted plants • Describe the process of applying the necessary treatment on plants showing signs of wilting, pests and disease. • Explain the benefits of resource optimisation. • Explain different methods of recycling and disposing waste. 	<ul style="list-style-type: none"> • Show how to prepare the planting bed in a greenhouse for transplanting the tissue cultured plants. • Show how to extract the plants from the pots ensuring no damage to plants and their roots. • Demonstrate the process of applying necessary treatment if the transplanted plants show signs of wilting, pests and disease. • Show how to use the relevant computer application to maintain the record of lab operations in the prescribed format. • Demonstrate various practices to optimise the usage of various resources such as water, electricity, and energy. • Demonstrate the process of recycling and disposing different types of waste in compliance with the applicable laws and regulations.
Classroom Aids	
Training kit (Trainer guide, Presentations)	
Tools, Equipment and Other Requirements	
Disinfectants, Parafilm /cotton plug, greenhouse or shade net, labware, refrigerator, chemicals/reagents, antiseptic liquids, first aid kit, fire extinguisher	

Module 5: Hygiene and cleanliness

Mapped to NOS AGR/N9903 v3.0

Terminal Outcomes:

- Discuss how to adhere to personal hygiene practices.
- Demonstrate ways to ensure cleanliness around the workplace.

Duration: 5:00	Duration: 5:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the requirements of personal health, hygiene and fitness at work. • Describe common health-related guidelines laid down by the organizations/ Government at the workplace. • Explain the importance of good housekeeping at the workplace. • Explain the importance of informing the designated authority on personal health issues related to injuries and infectious diseases. 	<ul style="list-style-type: none"> • Demonstrate personal hygiene practices to be followed at the workplace. • Demonstrate the correct way of washing hands using soap and water, and alcohol-based hand rubs. • Demonstrate the steps to follow to put on and take off a mask safely. • Show how to sanitize and disinfect one's work area regularly. • Demonstrate adherence to the workplace sanitization norms. • Show how to ensure cleanliness of the work area.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Personal Protective Equipment, cleaning equipment and materials, sanitizer, soap, mask	

Module 6: Safety and emergency procedures

Mapped to NOS AGR/N9903 v3.0

Terminal Outcomes:

- Describe how to adhere to safety guidelines.
- Show how to administer appropriate emergency procedures.

Duration: 10:00	Duration: 10:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List the PPE required at the workplace. • Describe the commonly reported hazards at the workplace. • Describe the hazards caused due to chemicals/pesticides/fumigants. • Describe the basic safety checks to be done before the operation of any equipment/machinery. • Describe the common first aid procedures to be followed in case of emergencies. • State measures that can be taken to prevent accidents and damage s at the workplace. • Explain the importance of reporting details of first aid administered, to the reporting officer/doctor, in accordance with workplace procedures. • State common health and safety guidelines to be followed at the workplace. 	<ul style="list-style-type: none"> • Check various areas of the workplace for leakages, water-logging, pests, fire, etc. • Demonstrate how to safely use the PPE and implements as applicable to the workplace. • Display the correct way of donning, doffing and discarding PPE such as face masks, hand gloves, face shields, PPE suits, etc. • Sanitize the tools, equipment and machinery properly. • Demonstrate the safe disposal of waste. • Demonstrate procedures for dealing with accidents, fires and emergencies. • Demonstrate emergency procedures to the given workplace requirements. • Demonstrate the use of emergency equipment in accordance with manufacturers' specifications and workplace requirements. • Demonstrate the administration of first aid. • Prepare a list of relevant hotline/ emergency numbers.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Personal protective equipment, first aid kit, equipment used in medical emergencies.	

Module 7: Employability Skills (60 hours)

Mapped to NOS DGT/VSQ/N0102 v1.0

Duration: 60:00

Key Learning Outcomes

Introduction to Employability Skills Duration: 1.5 Hours

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship Duration: 1.5 Hours

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century Duration: 2.5 Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

Basic English Skills Duration: 10 Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e-mail using basic English

Career Development & Goal Setting Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion Duration: 2.5 Hours

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy Duration: 5 Hours

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills Duration: 10 Hours

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship Duration: 7 Hours

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

Customer Service Duration: 5 Hours

30. Describe the significance of analysing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs Duration: 8 Hours

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
36. Perform a mock interview
37. List the steps for searching and registering for apprenticeship opportunities

Module 7: OJT

Mapped to AGR/Q8101

Duration: 120:00

Key Learning Outcomes

1. sterilise the lab and lab equipment
2. calibrate various lab equipment according to the tolerance prescribed by the manufacturer
3. prepare different stock solutions as the nutrient medium with the required constituents, strength, and volume.
4. check the culture medium for microbial contamination after autoclaving.
5. pre- treat the mother plant using the recommended fungicides to prevent bacterial contamination.
6. use of relevant tools to extract explant from the mother plant.
7. sterilise the explant using the prescribed sterilisation solution and transfer it into the culture medium using sterilised forceps.
8. apply the necessary treatment to resolve any issues with root development.
9. plant the tissue cultured plants in micro-pots filled with soil/ soilrite/ sand for primary hardening.
10. transfer the plants to larger pots for secondary hardening after they develop new leaves and roots.
11. extract the plants from the pots ensuring no damage to plants and their roots
12. apply necessary treatment if the transplanted plants show signs of wilting, pests and disease.

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate	In any stream	4	Plant Tissue Culture Technician	0		For the school Program, the minimum qualification of the Trainer should be Graduate in Botany. Their Teaching experience will be considered industry experience

Graduate	Agriculture / Horticulture/ Botany /Forestry	1	Plant Tissue Culture Technician	0		
Post Graduate	Agriculture / Horticulture / Botany/Forestry	0		0		

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role “ Plant Tissue Culture Technician ”, mapped to QP: “AGR/Q8101, v4.0”, Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q2601, v2.0”. The minimum accepted score as per MEPSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
B.Sc	Agriculture /Botany /Forestry /Agronomy /Horticulture and related streams	5	Agriculture/ Forestry/ Agronomy/ Horticulture and related streams and fields	0		Practical skills and knowledge required in Plant Tissue Culture Technician
M.Sc	Agriculture/ Botany/ Forestry/ Agronomy/ Horticulture and related streams	2	Agriculture/ Forestry/ Agronomy/ Horticulture and related streams and fields	0		Practical skills and knowledge required in Plant Tissue Culture Technician
PhD	Agriculture/ Botany/ Forestry/ Agronomy/ Horticulture and related streams	1	Agriculture/ Forestry/ Agronomy/ Horticulture and related streams and fields	0		Practical skills and knowledge required in Plant Tissue Culture Technician

Assessor Certification	
Domain Certification	Platform Certification
<p>“Plant Tissue Culture Technician”, “AGR/Q8101, v4.0”, Minimum accepted score is 80%</p>	<p>Certified for the Job Role: “Assessor”, mapped to the Qualification Pack: “MEP/Q2701, v2.0”, with a minimum score of 80%.</p>

Assessment Strategy

Assessment System Overview

In Agriculture Sector it is of ultimate importance that individuals dealing with crop production or livestock have the requisite knowledge and competencies to undertake the task. Based on the Assessment Criteria, SSC in association with empanelled AAs, define the test structure for the given job roles to cover the required skills and competencies. Assessment strategy consists of the following:

1. Multiple Choice Questions: To assess basic knowledge (Objective/Subjective)
2. Viva: To assess awareness on processes (Oral and/or written questioning)
3. Practical: To evaluate skills and identify competencies. (Observation)

Assessments for knowledge and awareness on processes may be conducted through 'real-time' internet-based evaluation or by conducting the same 'offline' through TABs. Skills and competencies are to be assessed by conducting 'practical' on the ground through qualified and ToA certified assessors.

While it is important that an individual has adequate knowledge and skills to perform a specific task, weightage for different aspects of assessment are given as follows:

- Multiple Choice Questions: 20%-30%, depending on the specific QP
- Viva: 20%
- Practical: 50% - 60% (Involves demonstrations of applications and presentations of procedures/tasks and other components)
- Assessment will be carried out by certified assessors through empanelled assessment partners. Based on the results of the assessment; ASCI will certify the learners/candidates

Testing Environment

Assessments are conducted on laptops, Mobiles and android tablets via both offline and online mode depending on the internet connectivity at the assessment location.

In remote locations/villages, assessments get delivered through tablets without the requirement of the Internet.

- Multilingual assessments (ASCI is conducting assessments in 13 + languages pan India)

- Rubric driven assessments in Practical/Viva sections and responses recorded accordingly
- All responses, data, records and feedback stored digitally on the cloud
- Advanced auto-proctoring features – photographs, time-stamp, geographic-tagging, toggle- screen/copy-paste disabled, etc.
- Android-based monitoring system
- End to end process from allocation of a batch to final result upload, there is no manual intervention
- Assessment will normally be fixed for a day after the end date of the training / within 7 days of completion of training.
- Assessment will be conducted at the training venue
- The room where assessment is conducted will be set with proper seating arrangements with enough space to curb copying or other unethical activities
- Question bank of theory and practical will be prepared by ASCI /assessment agency and approved ASCI. Only from approved Question Bank assessment agency will prepare the question paper. Theory testing will include multiple-choice questions, pictorial question, etc. which will test the trainee on his theoretical knowledge of the subject.
- The theory, practical and viva assessments will be carried out on the same day. In case of more number of candidates, the number of assessors and venue facilitation be increased and facilitated

Assessment			
Assessment Type	Formative or Summative	Strategies	Examples
Theory	Summative	MCQ/Written exam	Knowledge of facts related to the job role and functions. Understanding of principles and concepts related to the job role and functions
Practical	Summative	Structured tasks/Demonstration	Practical application /Demonstration /Application tasks
Viva	Summative	Questioning and Probing	Mock interviews on the usability of job roles/advantages /importance of adherence to procedures. Viva will be used to gauge trainee's confidence and correct knowledge in handling the job situation

The question paper is pre-loaded in the computer /Tablet and it will be in the language as requested by the training partner.

Assessment Quality Assurance framework

Assessment Framework and Design:

Based on the Assessment Criteria, SSC in association with AAs will define the test structure for the given roles to cover the required skills and competencies. ASCI offer a bouquet of tools for multi-dimensional evaluation of candidates covering language, cognitive skills, behavioural traits and domain knowledge.

Theoretical Knowledge - Item constructs and types are determined by a theoretical understanding of the testing objectives and published research about the item-types and constructs that have shown statistical validity towards measuring the construct. Test item types that have been reported to be coachable are not included. Based on these, items are developed by domain experts. They are provided with comprehensive guidelines of testing objectives of each question and other quality measures.

Type – Questions based on Knowledge Required, Case-based practical scenario questions and automated simulation-based questions.

Practical Skills - The practical assessments are developed taking into consideration two aspects: what practical tasks is the candidate expected to perform on the job and what aspects of the job cannot be judged through theoretical assessments. The candidates shall be asked to perform either an entire task or a set of subtasks depending on the nature of the job role

Type – Standardized rubrics for evaluation against a set of tasks in a demo/practical task

Viva Voce - Those practical tasks which cannot be performed due to time or resource constraints are evaluated through the viva mode. Practical tasks are backed up with Viva for thorough assessment and complete evaluation

Type – Procedural questions, dos and don'ts, subjective questions to check the understanding of practical tasks.

The assessor has to go through an orientation program organized by the Assessment Agency. The training would give an overview to the assessors on the overall framework of QP evaluation. The assessor shall be given a NOS and PC level overview of each QP as applicable. The overall structure of assessment and objectivity of the marking scheme will be explained to them. The giving of marks will be driven by an objective framework that will maintain the standardization of the marking scheme.

Type of Evidence and Evidence Gathering Protocol:

During the assessment the evidence collected by AAs and ASCI are:

- Geo Tagging to track ongoing assessment
- AA's coordinator emails the list of documents and evidence (photos and videos) to the assessor one day before the assessment. The list is mentioned below:
 - Signed Attendance sheet
 - Assessor feedback sheet
 - Candidate feedback sheet
 - Assessment checklist for assessor
 - Candidate Aadhar/ID card verification
 - Pictures of the classroom, labs to check the availability of adequate equipment's and tool to conduct the training and assessment
 - Pictures and videos of Assessment, training feedback and infrastructure.
- Apart from the Assessor, a Technical assistant popularly known as Proctor also ensures the proper documentation and they verify each other's tasks.
- To validate their work on the day of the assessment, regular calls and video calls are done.
- On-boarding and training of assessor and proctor is done on a timely basis to ensure that the quality of the assessment should be maintained.
- Training covers the understanding of QP, NSQF level, NOS and assessment structure

Methods of Validation

- Morning Check (Pre-Assessment): Backend team of AA calls and confirms assessor/technical SPOC event status. Assessor/Technical SPOC are instructed to reach the centre on time by 9:30 AM / as decided with TC and delay should be highlighted to the Training Partner in advance.
- Video Calls: Random video calls are made to the technical SPOC/assessor so as to keep a check on assessment quality and ensure assessment is carried out in a fair and transparent manner
- Aadhar verification of candidates
- Evening Check (Post Assessment): Calls are made to the ground team to ensure the event is over by what time and the documentation is done properly or not.

- TP Calling: To keep a check on malpractices, an independent audit team calls the TP on a recorded line to take confirmation if there was any malpractice activity observed in the assessment on part of the AA/SSC team. If calls are not connected, an email is sent to the TP SPOC for taking their confirmation
- Video and Picture Evidence: Backend team collects video and pictures for assessment on a real-time basis and highlights any issue such as students sitting idle/ trainer helping the candidates during the assessment.
- Surprise Visit: Time to time SSC/AA Audit team can visit the assessment location and conduct a surprise audit for the assessment carried out by the ground team.
- Geo Tagging: On the day of the assessment, each technical SPOC is required to login into our internal app which is Geotagged. Any deviation with the centre address needs to be highlighted to the assessment team on a real-time basis.

Method for assessment documentation, archiving, and Access:

- ASCI has a fully automated result generation process in association with multiple AAs
- Theory, Practical and Viva marks form the basis of the results and encrypted files generated to avoid data manipulation. All responses captured and stored in the System with Time-Stamps at the end of AAs and SSC. NOS-wise and PC-wise scores can be generated.
- Maker Checker concept: One person prepares the results and another audit result which is internally approved by AA at first and then gets vetted at the end of SSC
- All softcopies of documents are received from the on-ground tech team over email. The same are downloaded by our internal backend team and saved in Repository. The repository consists of scheme-wise folders. These scheme-wise folders have job role specific folders. These specific folders have Year wise and Month wise folders where all documents are saved in Batch specific folders. All Hard copies are filed and stored in the storeroom.

Result Review & Recheck Mechanism –

- Time-stamped assessment logs
- Answer/Endorsement sheets for each candidate
- Attendance Sheet
- Feedback Forms: Assessor feedback form, Candidate feedback form, TP feedback form
- The results for each of the candidate shall be stored and available for review (retained for 5 years/ till the conclusion of the project or scheme)

References

Glossary

Term	Description
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
Key Learning	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
AGR	Agriculture
NOS	National Occupational Standard (s)
NSQF	National Skills Qualifications Framework
OJT	On-the-job Training
QP	Qualifications Pack
PwD	People with Disability
PPE	Personal Protective Equipment