



### Model Curriculum

QP Name: Milk Tester

QP Code: AGR/Q4203

QP Version: 3.0

NSQF Level: 3

Model Curriculum Version: 2.0

Agriculture Skill Council of India || Agriculture Skill Council of India (ASCI), 6th Floor, GNG Tower, Plot No. 11, Sector -44

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## Training Parameters

<b>Sector</b>	Agriculture & Allied
<b>Sub-Sector</b>	Dairying
<b>Occupation</b>	Milk collection and handling
<b>Country</b>	India
<b>NSQF Level</b>	3
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/NIL
<b>Minimum Educational Qualification and Experience</b>	Minimum Educational Qualification: Grade 10 OR Grade 8 with two years of (NTC/ NAC) after 8th OR Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 8th grade pass with 2-year relevant experience OR 5th grade pass with 5-year relevant experience OR Previous relevant Qualification of NSQF Level 2 with 1-year relevant experience OR Previous relevant Qualification of NSQF Level 2.5 with 6 months' relevant experience Minimum Age:16 Years
<b>Pre-Requisite License or Training</b>	N/A
<b>Minimum Job Entry Age</b>	16 Years
<b>Last Reviewed On</b>	24/02/22
<b>Next Review Date</b>	24/02/25
<b>NSQC Approval Date</b>	24/02/22
<b>QP Version</b>	3.0
<b>Model Curriculum Creation Date</b>	24/02/22
<b>Model Curriculum Valid Up to Date</b>	24/02/25
<b>Model Curriculum Version</b>	2.0

<b>Minimum Duration of the Course</b>	270 Hours
<b>Maximum Duration of the Course</b>	270 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:
- Demonstrate the activities for preparing and maintaining work area and equipment for testing.
- Describe the process of milk testing and preparing and maintaining lab equipment for milk testing
- Describe the process of preparing for quality analysis and manage housekeeping for milk testing
- Demonstrate how to calibrate and maintain equipment and prepare reagents
- Demonstrate how to manage sampling and quality analysis for milk testing
- Explain the chemistry of milk, qualitative and quantitative test, system and processes of milk analysis
- Demonstrate how to maintain documentation and record keeping related to milk testing
- Explain basics of computer and ERP
- Explain how to ensure safety, hygiene and sanitation for milk testing
- Explain types of contamination and adulteration and their preventive and control measures

### 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
<b>Bridge Module</b>	<b>05:00</b>	<b>00:00</b>	<b>00:00</b>	<b>00:00</b>	<b>05:00</b>
Module 1: Introduction to the role of Milk Tester	05:00	00:00	00:00	00:00	05:00
<b>AGR/N4210 - Prepare and maintain work area and equipment for milk testing</b> <b>NOS Version No. 1.0</b> <b>NSQF Level 3</b>	<b>20:00</b>	<b>35:00</b>	<b>00:00</b>	<b>0:00</b>	<b>55:00</b>

Module 2: Process of preparing and maintaining work area and lab equipment for milk testing	20:00	35:00	00:00	30:00	55:00
<b>AGR/N4211 - Prepare for quality analysis and manage housekeeping for milk testing</b>	<b>25:00</b>	<b>35:00</b>	<b>00:00</b>	<b>0:00</b>	<b>60:00</b>
<b>NOS Version No. 1.0</b>					
<b>NSQF Level 3</b>					
Module 3: Process of calibrating and maintaining equipment for milk testing	15:00	20:00	00:00	10:00	35:00
Module 4: Process of managing housekeeping	10:00	15:00	00:00	05:00	25:00
<b>AGR/N4212 – Sampling and quality analysis for milk testing</b>	<b>20:00</b>	<b>40:00</b>	<b>00:00</b>	<b>0:00</b>	<b>60:00</b>
<b>NOS Version No. 1.0</b>					
<b>NSQF Level 3</b>					
Module 5: Process of taking milk sample for milk testing	10:00	20:00	00:00	0:00	30:00
Module 6: Process of quality analysis of milk samples	10:00	20:00	00:00	0:00	30:00
<b>AGR/N4213 - Complete Documentation and record keeping related to the milk testing</b>	<b>10:00</b>	<b>20:00</b>	<b>00:00</b>	<b>0:00</b>	<b>30:00</b>
<b>NOS Version No. 1.0</b>					
<b>NSQF Level 3</b>					
Module 7: Process of documentation and maintaining record related to milk testing	10:00	20:00	00:00	0:00	30:00
<b>AGR/N4214 – Safety, hygiene and sanitation for milk testing</b>	<b>10:00</b>	<b>20:00</b>	<b>00:00</b>	<b>0:00</b>	<b>30:00</b>
<b>NOS Version No. 1.0</b>					

<b>NSQF Level 3</b>					
Module 8: Maintaining safety, hygiene and sanitation for milk testing	10:00	20:00	00:00	0:00	30:00
<b>DGT/VSQ/N0101 Employability Skills NOS Version-1.0 NSQF Level-2</b>	<b>30:00</b>	<b>00:00</b>	<b>0:00</b>	<b>0:00</b>	<b>30:00</b>
Module 9: Employability Skills	30:00	00:00	0:00	0:00	30:00
<b>Total Duration</b>	<b>120:00</b>	<b>150:00</b>		<b>0:00</b>	<b>270:00</b>

## Module Details

### Module 1: Introduction to the role of Milk Tester

#### Bridge Module

#### Terminal Outcomes:

- Discuss the roles and responsibilities of a Milk Tester

<b>Duration:</b> 05:00	<b>Duration:</b> 00:00
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Describe the size and scope of the Dairy Industry and its market</li> <li>• Discuss the role and responsibilities of a Milk Tester</li> <li>• Describe various employment opportunities and career progression for Milk Tester</li> <li>• Discuss basic reading capabilities to enable reading of signs, notices and/or cautions at site</li> <li>• Explain the process of milk procurement</li> <li>• Discuss the concept of clean and antibiotic free milk</li> <li>• Explain the importance of milk testing</li> <li>• List types of synthetic milk and its effects on human health</li> <li>• Explain emerging dimension for dairy business (viz. market technology and innovation)</li> </ul>	
<b>Classroom Aids:</b>	
Laptop, White Board, Marker, Projector	
<b>Tools, Equipment and Other Requirements</b>	

## Module 2: Process of preparing and maintaining work area and lab equipment for milk testing

Mapped to NOS AGR/N4210 v1.0

### Terminal Outcomes:

- Demonstrate preparation of work area for milk testing
- Describe the process of preparing and maintaining machineries and tools for milk testing

<b>Duration: 20:00</b>	<b>Duration: 35:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the types of chemicals, reagents and equipment required for the cleaning and maintenance</li> <li>• Describe the types of glass wares used in testing</li> <li>• Describe the principles and procedures for calibration of testing equipment</li> <li>• Explain the cleaning methods and instructions from supplier/ manufacturer for all equipment</li> <li>• Describe the safety standards and regulations by FSSAI</li> <li>• Describe the legal regulations pertaining to health and safety while using the sanitizers, disinfectants and disposal of waste</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate how to maintain cleanliness at the work area using approved sanitizers</li> <li>• Demonstrate how to maintain safe and hygienic conditions for milk testing and analysis</li> <li>• Show how to create cleanliness checklist and ensure all points are covered prior to quality test</li> <li>• Demonstrate disposing of the waste material as per defined SOPs and industry requirement</li> <li>• Show how to check the condition and performance of required equipment for milk testing and analysis</li> <li>• Demonstrate cleaning of equipment and glass wares with recommended sanitizers</li> <li>• Show how to organize equipment and glass wares for milk analysis</li> </ul>
<b>Classroom Aids:</b>	
Laptop, White Board, Marker, Projector	
<b>Tools, Equipment and Other Requirements</b>	
Checklist Format, Weighing Scale, Gerber Fat Testing Machine, Fat and SNF Analyser, Lactometer, pH Meter, Moisture Analyser, Refractometer, Sterilisers, Flasks, Refract Meter, TDS Meter, Hot Plate, Sanitizers, Glassware	

### Module 3: Process of calibrating and maintaining equipment for milk testing

*Mapped to NOS AGR/N4211 v1.0*

#### Terminal Outcomes:

- Demonstrate calibrating and maintain milk testing equipment
- Describe the process of preparing reagents for milk testing

<b>Duration: 15:00</b>	<b>Duration: 20:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Enlist the equipment used in the laboratory and its maintenance procedure</li> <li>• Explain the SOP and frequency for calibration of each equipment</li> <li>• List the reagents required for calibration, analysis of procured milk and containers</li> <li>• Explain the procedure and frequency for preparation of all reagents required for analysis of procured milk and containers</li> <li>• Describe various lab techniques</li> <li>• Describe various sanitizers and disinfectants and their handling and storage</li> <li>• Enlist annual maintenance contracts</li> <li>• Enlist all equipment along with its calibration frequency</li> <li>• Describe basic milk microbiology</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate handling and managing calibration equipment and calibration of each equipment</li> <li>• Show how to record the readings of calibration in the register and maintain calibration reports</li> <li>• Demonstrate checking and maintaining the performance of equipment</li> <li>• Show how to record details of lab equipment in the register and ERP</li> <li>• Demonstrate the preparation and supervision of each reagents</li> <li>• Demonstrate maintaining and managing the inventory of all chemicals, lab equipment, glass wares etc.</li> <li>• Demonstrate cleaning and maintenance of equipment as per maintenance procedures for equipment</li> </ul>
<b>Classroom Aids:</b>	
Laptop, White Board, Marker, Projector	
<b>Tools, Equipment and Other Requirements</b>	
Field visit is a must for this section to familiarize and demonstrate the functions of BMC	

## Module 4: Process of managing housekeeping

Mapped to NOS AGR/N4211 v1.0

### Terminal Outcomes:

- Demonstrate management of housekeeping for milk testing

<b>Duration: 10:00</b>	<b>Duration: 15:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the SOP and checklist for housekeeping</li> <li>• Describe how to file the housekeeping checklist</li> <li>• Describe how to maintain records and document all the housekeeping activities</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate how to comply the SOP and checklist of housekeeping</li> <li>• Show how to inspect all processing units and follow the process of housekeeping</li> <li>• Demonstrate reporting to supervisor in case of any issue and suggest corrective actions</li> <li>• Show how to maintain and file all documents pertaining to housekeeping</li> <li>• Guide &amp; Demonstrate the necessary actions/activities in case of any emergency</li> </ul>
<b>Classroom Aids:</b>	
Laptop, White Board, Marker, Projector	
<b>Tools, Equipment and Other Requirements</b>	
Field visit is a must for this section to familiarize and demonstrate the functions of BMC	

## Module 5: Process of taking milk sample for milk testing

Mapped to NOS AGR/N4212 v1.0

### Terminal Outcomes:

- Demonstrate taking milk sample for milk testing

<b>Duration: 10:00</b>	<b>Duration: 20:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Enlist types of procured milk, containers used in the organisation</li> <li>• Describe the SOP to collect milk samples</li> <li>• Describe the equipment used in the laboratory and its maintenance procedure</li> <li>• Enlist the reagents required for analysis of procured milk, containers</li> <li>• Explain sampling methods and procedures for procured milk</li> <li>• Explain the methods to verify supplier documents as per organization's standards</li> <li>• Describe the procedure for storing, maintaining and disposing of production control samples</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate collecting of Procured milk, from delivery truck/storage area following SOP</li> <li>• Demonstrate collecting of finished milk and milk products from the collection centre or warehouse and collecting pre-shipment sample</li> <li>• Show how to disperse milk fat before chemical test of milk</li> <li>• Show how to use plunger, dipper for taking milk sample</li> <li>• Show how to use autoclave/pressure cooker for sterilization of dipper</li> <li>• Demonstrate labelling of samples</li> <li>• Demonstrate cooling the sample at correct temperature prior to testing</li> <li>• Show how to transfer the sample for analysis</li> <li>• Show how to collect, file and maintain all the documents and verify certificate of analysis</li> <li>• Demonstrate disposal procedure as per organization standards</li> </ul>
<b>Classroom Aids:</b>	
Laptop, White Board, Marker, Projector	
<b>Tools, Equipment and Other Requirements</b>	
Plunger, Dipper, Autoclave	

## Module 6: Process of quality analysis of milk samples

Mapped to NOS AGR/N4212 v1.0

### Terminal Outcomes:

- Demonstrate quality analysis of the milk samples

<b>Duration:</b> 10:00	<b>Duration:</b> 20:00
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Describe the SOP for equipment and analysis parameters for milk sample</li> <li>• Enlist various techniques for milk testing</li> <li>• Describe the process of various milk testing techniques</li> <li>• Explain the basic milk chemistry</li> <li>• Describe the methods and procedures for maintaining the shelf-life of the milk samples</li> <li>• Explain how to handle market complains</li> <li>• Explain the inventory management of lab supplies</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate analysis of milk sample following the SOP</li> <li>• Demonstrate basic test on physical parameters on milk and milk product samples</li> <li>• Demonstrate basic chemical analysis like moisture content, bulk density, pH, total soluble solids (TSS) using a refractometer, etc. on milk, using equipment like electronic milk tester/milk analyser (testing % Fat &amp; % SNF), etc. for ensuring raw milk quality</li> <li>• Show how to monitor and maintain storage condition</li> <li>• Show how to inform any discrepancy in the analysis result to the supervisor</li> <li>• Demonstrate recording the analysis results in the register and ERP</li> <li>• Demonstrate maintaining the cleanliness of the glass wares and other equipment and follow the maintenance procedures for equipment</li> </ul>
<b>Classroom Aids:</b>	
Laptop, White Board, Marker, Projector	
<b>Tools, Equipment and Other Requirements</b>	
Plunger, Dipper, Autoclave	

**Module 7: Process of documentation and maintaining record related to milk testing**  
**Mapped to NOS AGR/N4213 v1.0**

**Terminal Outcomes:**

- Describe the process of the documentation and maintaining records of procured milk
- Describe the process of the documentation and maintaining records of equipment

<b>Duration: 10:00</b>	<b>Duration: 20:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Describe the documentation system like milk analysis chart, containers analysis chart and complain analysis chart, etc.</li> <li>• Enlist the details to be recorded of procured milk, containers, production sample, control sample, market sample, shelf-life sample</li> <li>• Explain the details to be recorded and maintained of equipment, calibration, maintenance</li> <li>• Describe the methods to record and maintain records of observations (if any) related to quality analysis</li> <li>• Describe the methods to track back the record from procured milk to processed milk</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate documenting and maintaining records of procured milk and containers sampled. For example, place of sampling, batch number, sampling procedure</li> <li>• Demonstrate documenting and maintaining records of procured milk and container analysed such as method of analysis, parameters analysed</li> <li>• Demonstrate recording the analysis details in ERP</li> <li>• Demonstrate documenting and maintaining record of the equipment and equipment calibration used for analysis</li> </ul>
<b>Classroom Aids:</b>	
Laptop, White Board, Marker, Projector	
<b>Tools, Equipment and Other Requirements</b>	
Record Book	

## Module 8: Maintaining safety, hygiene and sanitation for milk testing

Mapped to NOS AGR/N4214 v1.0

### Terminal Outcomes:

- Describe safety and sanitation process related to milk testing
- Demonstrate safety practices related to milk testing

<b>Duration:</b> 10:00	<b>Duration:</b> 20:00
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Describe contamination and adulteration</li> <li>• Describe the food safety and hygiene standards</li> <li>• Explain the possible physical, chemical and biological hazards and methods of prevention</li> <li>• Explain the personal hygiene requirements and its importance</li> <li>• Enlist different types of sanitizers used for process area, equipment and the procedure to use them</li> <li>• Describe the dairy safety Standards and Regulations (as per FSSAI)</li> <li>• Describe the quality parameters, quality assessment and basic milk chemistry</li> <li>• Explain labelling/marketing for milk containers and their storage</li> <li>• Describe housekeeping practices</li> <li>• Describe CIP and COP methods and procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate complying safety and hygiene procedure as per organization standards</li> <li>• Show how to use gloves, hairnets, appropriate shoes to maintain personal hygiene</li> <li>• Demonstrate creating hygienic environment for milk production by inspecting procured milk and finished milk products as per various defined parameters</li> <li>• Show how to clean milk processing equipment</li> <li>• Demonstrate using safety equipment and hazard management</li> <li>• Show how to report supervisor regarding any rodents and pest problem and record the data</li> <li>• Demonstrating documenting and recording data as per dairy safety control system</li> <li>• Show how to determine the quality of milk based on set criterion</li> <li>• Show how to prevent cross contamination by appropriate storage of procured milk, finished products and allergens</li> <li>• Demonstrate labelling milk and finished products and storage practice</li> </ul>
<b>Classroom Aids:</b>	
Laptop, White Board, Marker, Projector	
<b>Tools, Equipment and Other Requirements</b>	
Sanitizer, Personal Protective Equipment Like: Safety Gloves, Safety Boots, Hairnet, First Aid Kit: Bandages, Adhesive Bandages, Betadine Solution / Ointment, Pain Relief Spray / Ointment, Antiseptic Liquid; Antidote, Phone Directory, Search Lights, Fire Extinguisher	

## Module 9: Employability Skills (30 hours)

*Mapped to NOS DGT/VSQ/N0101 v1.0*

**Duration: 30:00**

### Key Learning Outcomes

#### Introduction to Employability Skills Duration: 1 Hour

After completing this programme, participants will be able to:

1. Discuss the importance of Employability Skills in meeting the job requirements

#### Constitutional values - Citizenship Duration: 1 Hour

2. Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen.
3. Show how to practice different environmentally sustainable practices

#### Becoming a Professional in the 21st Century Duration: 1 Hours

4. Discuss 21st century skills.
5. Display positive attitude, self -motivation, problem solving, time management skills and continuous learning mindset in different situations.

#### Basic English Skills Duration: 2 Hours

6. Use appropriate basic English sentences/phrases while speaking

#### Communication Skills Duration: 4 Hour

7. Demonstrate how to communicate in a well -mannered way with others.
8. Demonstrate working with others in a team

#### Diversity & Inclusion Duration: 1 Hour

9. Show how to conduct oneself appropriately with all genders and PwD
10. Discuss the significance of reporting sexual harassment issues in time

#### Financial and Legal Literacy Duration: 4 Hours

11. Discuss the significance of using financial products and services safely and securely.
12. Explain the importance of managing expenses, income, and savings.
13. Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws

#### Essential Digital Skills Duration: 3 Hours

14. Show how to operate digital devices and use the associated applications and features, safely and securely
15. Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely

#### Entrepreneurship Duration: 7 Hours

16. Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges

#### Customer Service Duration: 4 Hours

17. Differentiate between types of customers
18. Explain the significance of identifying customer needs and addressing them

19. Discuss the significance of maintaining hygiene and dressing appropriately

**Getting ready for apprenticeship & Jobs Duration: 2 Hours**

20. Create a biodata

21. Use various sources to search and apply for jobs

22. Discuss the significance of dressing up neatly and maintaining hygiene for an interview

23. Discuss how to search and register for apprenticeship opportunities

## Annexure

### Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
<b>Diploma</b>	Regular Diploma more than 15 months in veterinary /Animal Husbandry / Dairying	3	Experience required in Dairy Farm Management (as Milk Tester)	0	NA	
<b>Graduation</b>	Graduate with science	2	Experience required in Dairy Farm Management (as Milk Tester)	0	NA	
<b>Graduation</b>	B. Tech (Dairy)	0	Experience required in Dairy Farm Management (as Milk Tester)	0	NA	

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Milk Tester" mapped to QP: "AGR/Q4203, v3.0". Minimum accepted score is 80%.	Certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q2601". Minimum accepted % as per respective SSC guidelines is 80%.

## Assessor Requirements

Assessor Prerequisites – Milk Tester						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
B. Tech	Dairy and related streams	4	In Dairy Science/Animal Science/Veterinary Science or related streams	0		Practical skills and knowledge required in operation and monitoring of milk transportation activities
B. V. Sc.		4	In Dairy Science/Animal Science/Veterinary Science or related streams	0		Practical skills and knowledge required in operation and monitoring of milk transportation activities
B. Sc	Animal Sciences/ Dairy Science/ Dairy Technology	5	In Dairy Science/Animal Science/Veterinary Science or related streams	0		Practical skills and knowledge required in operation and monitoring of milk transportation activities
M. V. Sc		2	In Dairy Science/Animal Science/Veterinary Science or related streams	0		Practical skills and knowledge required in operation and monitoring of milk transportation activities
M Sc	Animal Science/Dairy Science/Dairy Technology	2	In Dairy Science/Animal Science/Veterinary Science or related streams	0		Practical skills and knowledge required in operation and monitoring of milk transportation activities

PhD	Animal Science/ Veterinary Science/Dairy Technology/Dairy Science	1	In Dairy Science/Animal Science/Veterinary Science or related streams	0	Practical skills and knowledge required in operation and monitoring of milk transportation activities
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Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role <b>“Milk Tester”</b> , mapped to QP: “AGR/Q4203, v3.0”, Minimum accepted score is 80%	Certified for the Job Role: “Assessor”, mapped to the Qualification Pack: “MEP/Q2701, v1.0”, with a minimum score of 80%.

## 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 empaneled 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 ground through qualified and ToA certified assessors.

While it is important that an individual has adequate knowledge and skills to perform a specific task, weight age for different aspects for 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 empaneled assessment partners. Based on the results of 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 assessment location.

In remote locations/villages, assessments get delivered through tablets without the requirement of 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 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 training / within 7 days of completion of training.
- Assessment will be conducted at the training venue
- 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 same day. In case of more number of candidates, 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 usability of job roles/advantages /importance of adherence to procedures. Viva will be used to gauge trainee's confidence and correct knowledge in handling job situation

The question paper 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, behavioral traits and domain knowledge.

**Theoretical Knowledge** - Item constructs and types are determined by 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 which 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 jobrole

**Type** – Standardized rubrics for evaluation against 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, Do's & Don'ts, subjective questions to check understanding of practical tasks.

Assessor has to go through orientation program organized by Assessment Agency. The training would give an overview to the assessors on the overall framework of QP evaluation. Assessor shall be given a NOS and PC level overview of each QP as applicable. 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 which will maintain standardization of marking scheme.

**Type of Evidence and Evidence Gathering Protocol:**

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

- Geo Tagging to track ongoing assessment
- AA's coordinator emails the list of documents and evidences (photos and videos) to the assessor one day prior to the assessment. List is mentioned below:
  - Signed Attendance sheet
  - Assessor feedback sheet
  - Candidate feedback sheet
  - Assessment checklist for assessor
  - Candidate Aadhar/ID card verification
  - Pictures of 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, 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 assessment, regular calls and video calls are done.
- On-boarding and training of assessor and proctor is done on timely basis to ensure that 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 check on assessment quality and ensure assessment is carried out in fair and transparent manner
- **Aadhar verification** of candidates
- **Evening Check (Post Assessment):** Calls are made to the ground team to ensure event is over by what time and the documentation is done in proper manner or not.
- **TP Calling:** To keep check on malpractice activity, independent audit team calls to TP on recorded line to take confirmation if there was any malpractice activity observed in assessment on part of AA/SSC team. If calls are not connected, email is send to TP SPOC for taking their confirmation
- **Video and Picture Evidence:** Backend team collects video and pictures for assessment on real time basis and highlights any issue like, Students sitting idle/trainer allowed for helping out candidates during assessment.
- **Surprise Visit:** Time to time SSC/AA Audit team can visit the assessment location and do surprise audit for assessment process carried out by ground team.
- **Geo Tagging:** On day of assessment, each technical SPOC is required to login in our internal app which is Geo tagged. Any deviation with centre address needs to be highlighted to assessment team on real-time basis.

### **Method for assessment documentation, archiving, and Access:**

- ASCI has fully automated result generation process in association with multiple AAs
- Theory, Practical and Viva marks forms the basis of the results and encrypted files generated to avoid data manipulation. All responses captured and stored in System with Time-Stamps at the end of AAs and SSC. NOS-wise and PC-wise scores can be generated.
- Maker Checker concept: 1 person prepares results and other audit result which is internally approved by AA at first and then gets vetted at the end of SSC
- All soft copy of documents is received from the on-ground tech team over mail. 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 storeroom.
- **Result Review and 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 conclusion of project or scheme)

# References

## Glossary

Term	Description
<b>Declarative Knowledge</b>	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
<b>Key Learning Outcome</b>	The 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).
<b>OJT (M)</b>	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on-site
<b>OJT (R)</b>	On-the-job training (Recommended); trainees are recommended the specified hours of training on-site
<b>Procedural Knowledge</b>	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work or produce a tangible work output by applying cognitive, affective or psychomotor skills.
<b>Training Outcome</b>	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
<b>Terminal Outcome</b>	The 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
DSR	Direct Seeded Rice
ETL	Economic Threshold Levels
HDPE	High-Density Polyethylene
IPM	Integrated Pest Management
NOS	National Occupational Standard (s)
NSQF	National Skills Qualifications Framework
OJT	On-the-job Training
PP	Polypropylene
PHI	Protected Health Information
PwD	People with Disability
PPE	Personal Protective Equipment
QP	Qualifications Pack
SRI	System of Rice Intensification