Model Curriculum

QP Name: Bulk Milk Cooler (BMC) Operator

QP Code: AGR/Q4204

QP Version: 3.0

NSQF Level: 4

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

Sector	Agriculture & Allied
Sub-Sector	Dairying
Occupation	Milk collection and handling
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL
Minimum Educational Qualification and Experience	Minimum Educational Qualification: 12th grade pass OR Completed 2nd year of 3-year diploma (after 10th) and pursuing regular diploma OR 10th grade pass plus 2-year NTC OR 10th grade pass plus 1-year NTC plus 1 year NAC OR 8th pass plus 2-year NTC plus 1-Year NAC plus CITS OR 10th grade pass and pursuing continuous schooling OR 10th Grade Pass with 2-year relevant experience OR Previous relevant Qualification of NSQF Level 3.0 with minimum education as 8th Grade pass with 3- year relevant experience OR Previous relevant Qualification of NSQF Level 3.5 with 1.5- year relevant experience
Pre-Requisite License or Training	N/A
Minimum Job Entry Age	18 Years
Last Reviewed On	24/02/2022
Next Review Date	24/02/2025
NSQC Approval Date	24/02/2022
QP Version	3.0
Model Curriculum Creation Date	24/02/2022

Model Curriculum Valid Up to Date	24/02/2025
Model Curriculum Version	2.0
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.

- Explain about the Bulk Milk Cooler and its process machineries and tools
- Demonstrate preparing and maintaining work area and process machineries for operating Bulk Milk Cooler (BMC)
- Demonstrate operating Bulk Milk Cooler
- Describe the equipment utilization and organizing procured milk and equipment
- Demonstrate the process of cleaning and maintaining post cooling the BMC
- Describe the process of maintaining document and record keeping related to operation of Bulk Milk Cooler
- Explain Basics of computer and ERP
- Demonstrate maintaining safety, hygiene and sanitation of Bulk Milk Cooler

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
Bridge Module	**5:00**	**00:00**	0:00	0:00	**05:00**
Module 1: Introduction to the role of Bulk Milk Cooler (BMC) Operator	5:00	00:00	0:00	0:00	05:00
AGR/N4215 - Prepare and maintain work area and process machineries for operating Bulk Milk Cooler (BMC) **NOS Version No. 1.0** **NSQF Level 4**	**20:00**	**35:00**	0:00	0:00	**55:00**
Module 2: Process of preparing and maintaining work area and process machineries for operating BMC	20:00	35:00	0:00	0:00	55:00

AGR/N4216 - Prepare for operating Bulk Milk Cooler (BMC) **NOS Version No. 1.0** **NSQF Level 4**	**10:00**	**20:00**	0:00	0:00	**30:00**
Module 3: Process of preparing to operate BMC	10:00	20:00	0:00	0:00	30:00
AGR/N4217 - Operate Bulk Milk Cooler (BMC) and ensure cleaning and maintenance post cooling **NOS Version No. 1.0** **NSQF Level 4**	**20:00**	**40:00**	0:00	0:00	**60:00**
Module 4: Process of operating BMC	12:00	25:00	0:00	0:00	37:00
Module 5: Process of post-cooling, cleaning and maintenance of BMC	08:00	15:00	0:00	0:00	23:00
AGR/N4218 - Complete documentation and record keeping related to operating Bulk Milk Cooler (BMC) **NOS Version No. 1.0** **NSQF Level 4**	**20:00**	**40:00**	0:00	0:00	**60:00**
Module 6: Process of documentation and record keeping related to operating of BMC	20:00	40:00	0:00	0:00	60:00
AGR/N4219 – Ensure safety, hygiene and sanitation for cooling milk in BMC **NOS Version No. 1.0** **NSQF Level 4**	**15:00**	**15:00**	0:00	0:00	**30:00**
Module 7: Maintaining safety, hygiene and sanitation for cooling milk in BMC	15:00	15:00	0:00	0:00	30:00
DGT/VSQ/N0102 Employability Skills **NOS Version-1.0** **NSQF Level-4**	**60:00**	**00:00**	**0:00**	**0:00**	**60:00**
Module 8: Employability Skills	60:00	00:00	0:00	0:00	60:00
Total Duration	**150:00**	**150:00**		**00:00**	**300:00**
OJT: 90 hours					

Module Details

Module 1: Introduction to the role of Bulk Milk Cooler Operator

Bridge Module

Terminal Outcomes:

- Describe the roles and responsibilities of a Bulk Milk Cooler Operator

Duration: *05:00*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the size and scope of the Dairy Industry and its market • Discuss the roles and responsibilities of a BMC operator • Describe various employment opportunities and career progression for BMC operator • Explain the basic skills of communication • Discuss basic reading capabilities to enable reading of signs, notices and/or cautions at site • Explain the process of milk procurement • Explain the importance of cooling the milk in a stipulated time after the procurement • Discuss the concept of clean and antibiotic free milk • List types of synthetic milk and its effects on human health • Explain emerging dimension for dairy business (viz. market technology and innovation)	

Classroom Aids:	
Laptop, White Board, Marker, Projector	
Tools, Equipment and Other Requirements	

Module 2: Process of preparing and maintaining work area and process machineries for operating BMC

Mapped to NOS AGR/N4215 v1.0

Terminal Outcomes:

- Demonstrate preparing and maintaining work area for operating BMC
- Demonstrate preparing and maintaining machineries and tools for operating BMC

Duration: 20*:00*	**Duration**: *35:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe SOP for operating BMC • Explain the utility of a BMC • Explain the precautions to take related to BMC operation • Describe about the proper dress code to follow when working on BMC • Enlist the types of BMC • Explain the types of cooling systems • Enlist the types of chemicals, materials and equipment required for the cleaning and maintenance • Explain the cleaning process to disinfect equipment/ tools • Describe the legal regulations related to maintaining health, safety and preventing hazards at the work place	• Demonstrate maintaining cleanliness and hygienic conditions at the work area through approved sanitizers • Show how to dispose of waste material as per organization's standard and industry requirement • Demonstrate checking the functioning and performances of the equipment • Show how to check if there is no leakage of refrigerant of BMC by using test like bubble test, halide torch test, Nessler's reagent, sulphur candle test, electronic test detector • Demonstrate arranging necessary tools required and set the machine • Show how to attend any minor repair and damage • Demonstrate selecting and setting machines and tools • Show how to check working of hot water generating system
Classroom Aids:	
Laptop, White Board, Marker, Projector	
Tools, Equipment and Other Requirements	
Fat And SNF Analyser, Kit For Adulteration Test , Lactometer , Fat Testing Centrifugal Machine Field visit is a must for this section to familiarize and demonstrate the functions of BMC	

Module 3: Process of preparing to operate BMC

Mapped to NOS AGR/N4216 v1.0

Terminal Outcomes:

- Describe the plan for equipment utilization for operating BMC
- Demonstrate organizing procured milk and equipment for operating BMC

Duration: *10:00*	**Duration**: 20*:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Enlist the types of procured milk (cow milk, goat milk, buffalo milk, etc.) and various types of dairy products • Enlist the types of milk cooling systems • Enlist the types of machineries used for processing each type of product • Explain the sanitary standards for farm milk cooling and holding tanks • Describe about handling of all processing machineries • Describe the supplier/manufacturer instructions related to machinery operation • Describe all the precaution and checklist for operating the BMC • Describe about various sanitizers and disinfectants and using methods	• Demonstrate handling all processing units • Demonstrate calculating process time for effective utilization of machinery and manpower • Demonstrate starting the BMC with taking all the precautions • Illustrate process chart/product flow chart, etc. • Show how to handle and store sanitizers and disinfectant • Show how to ensure proper functioning of machineries • Demonstrate delegating work to the assistants or helper efficiently • Show how to conduct quality checks of the procured milk • Demonstrate pre-cooling the milk following the checklist • Demonstrate minor repairing or adjustment of machine • Demonstrate checking for leakage in inlet/outlet valves • Show how to keep records of calibrations and observations
Classroom Aids:	
Laptop, White Board, Marker, Projector	
Tools, Equipment and Other Requirements	
Field visit is a must for this section to familiarize and demonstrate the functions of BMC	

Module 4: Process of operating BMC

Mapped to NOS AGR/N4217 v1.0

Terminal Outcomes:

- Demonstrate operating the Bulk Milk Cooler

Duration: 12*:00*	**Duration**: *25:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the procedure for maintaining the process equipment • Explain the SOP to obtain milk sample • Describe the dress code to be followed • Explain the supplier/manufacturer instructions related to machineries • Explain the handling all processing machineries • Describe the process and process parameters for production of various product	• Demonstrate checking the insulating material • Demonstrate obtaining sample milk following the SOP • Show how to open the outlet and start the pump after measurement and sampling • Show how to monitor the volumetric meter • Demonstrate using the thermostat • Show how to prevent over agitation of milk • Show how to analyze the process parameters • Demonstrate analysing the entire method from storage of chilled milk for further processing to record time, temperature, pressure, volume reading at each stage • Demonstrate reading and recording time, temperature, pressure and volume during each stage of cooling • Show how to address any discrepancies or malfunction to the supervisor • Demonstrate manual scrubbing following the standard procedure
Classroom Aids:	
Laptop, White Board, Marker, Projector	
Tools, Equipment and Other Requirements	
Field visit is a must for this section to familiarize and demonstrate the functions of BMC	

Module 5: Process of post-cooling, cleaning and maintenance of BMC

Mapped to NOS AGR/N4217 v1.0

Terminal Outcomes:

- Demonstrate the activities of post-cooling and maintenance of BMC

Duration: *08:00*	**Duration**: *15:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe about various sanitizers and disinfectants and using methods • Describe the application of cleaning agents and sanitizers • Describe the SOP of periodic preventive maintenance of machines and equipment and its importance • Describe the cleaning process of all machines and equipment as per the standard • Explain the need of using bright light to check the condition inside the cooling tank	• Demonstrate CIP of the tank, pipelines, pump, filter as per the standard procedure • Demonstrate cleaning the exterior of milk cooler using recommended cleaning agents • Show how to check condition of condensing unit • Demonstrate checking the tank for excessive buttering or foaming • Show how to check agitator and intermittent agitation • Demonstrate conducting minor repairs of machines • Demonstrate preventive maintenance of all machine and equipment following the SOP
Classroom Aids:	
Laptop, White Board, Marker, Projector	
Tools, Equipment and Other Requirements	
Field visit is a must for this section to familiarize and demonstrate the functions of BMC	

Module 6: Process of documentation and record keeping related to operating of BMC

Mapped to NOS AGR/N4218 v1.0

Terminal Outcomes:

- Describe the documentation of procured milk, cooling process and chilled milk
- Show how to maintain records of procured milk, process parameters and chilled milk

Duration: 20*:00*	**Duration**: 4*0:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the production chart, process chart and finished product chart followed in the organization • Enlist the details to be recorded and maintained on procured milk and finished products • Enlist the details to be recorded and maintained on production plan and process parameters • Explain the methods to track back the record from finished product to procured milk • Describe the process of entering the details in the ERP system	• Demonstrate entering data in ERP system of the organization for future reference • Show how to document and maintain records of procured milk processed in the equipment such as tag details • Demonstrate verifying and maintaining documents for quality management system audits • Show how to document and manage details pertaining to process of milk, type of procured milk used, batch size, wastage disposal, any discrepancies • Demonstrate verifying documents and track from finished product to ingredients • Show how to record the observation or deviations related to finished products • Show how to calculate the balance of fat and SNF between procured and dispatched milk
Classroom Aids:	
Laptop, White Board, Marker, Projector	
Tools, Equipment and Other Requirements	
ERP software	

Module 7: Maintaining safety, hygiene and sanitation for cooling milk in BMC

Mapped to NOS AGR/N4219 v1.0

Terminal Outcomes:

- Describe the hygiene and sanitation related functions for cooling milk in BMC
- Demonstrate safety practices for cooling milk in BMC

Duration: *15:00*	**Duration**: 15*:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe contamination and adulteration and their prevention methods • Describe the personal hygiene requirement and its need • Explain the criteria for determining the quality of milk • Enlist different types of hazards and their prevention methods • Explain Food Safety Standards and Regulation • Explain the safety norms, quality parameters, quality assessments, labeling and marking • Describe the FIFO and FEFO methods of inventory management • Describe the workplace check-list for safety and hygiene	• Show how to maintain personal hygiene and wear safety gears • Show how to maintain hygienic condition for BMC and maintain cleanliness regularly • Demonstrate inspecting procured raw milk for all the parameters. • Demonstrate conducting workplace checklist audits • Show how to use safety equipment • Demonstrate housekeeping practices • Show how to report supervisor regarding any rodents and pest problem • Demonstrate determining the quality of milk and how to prevent cross-contamination • Show how to store and label procured milk, chemicals, allergens etc.
Classroom Aids:	
Laptop, White Board, Marker, Projector	
Tools, Equipment and Other Requirements	
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 8: 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 9: On-the-Job Training

Mapped to Quality Bulk Milk Cooler

Mandatory Duration: 90:00	Recommended Duration: 00:00
Location: On Site	

Terminal Outcomes

- Show how to Communicate effectively at the workplace with internal and external stakeholders
- Carry out commercial activities such as buying and selling dairy related products using the appropriate e-commerce platforms or from authorized vendor
- Process payments using the relevant e-payment method.
- Prepare training schedule for an apprentice.
- Explain the requirements of personal health, hygiene and fitness at work.
- Discuss the industry recommended practices for the safe utilization of dairy products
- Implement the practices related to gender and PwD sensitization.

Annexure

Trainer Requirements

Job Role Name	Minimum Educational Qualification of the Trainer	Specialization	Relevant Industry Experience		Training Experience		Remarks
			Years	Specialization	Years	Specialization	
Bulk Milk Cooler (BMC) Operator	Diploma	Veterinary /Animal Husbandry / Dairying	5	Bulk Milk Cooler (BMC) Operation	0		Regular Diploma more than 15 months in veterinary /Animal Husbandry / Dairying
Bulk Milk Cooler (BMC) Operator	Graduate	Science	2	Bulk Milk Cooler (BMC) Operation	0		For the school Program minimum qualification of the Trainer should be Graduate (Agriculture/ Zoology/Dairy) with minimum 3 years Teaching experience (will be considered industry experience)
Bulk Milk Cooler (BMC) Operator	Graduate	Dairy Science/ Dairy Technology	0		0		

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Bulk Milk Cooler (BMC) Operator" mapped to QP: "AGR/Q4204, v3.0". Minimum accepted score is 80%.	Certified for the Job Role: "Trainer (Vet and Skills)", mapped to the Qualification Pack: "MEP/Q2601, v2.0". Minimum accepted % as per respective SSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites - Bulk Milk Cooler Operator						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B. V. Sc.		4	In Dairy Science/Animal Science/Veterinary Science or related streams	0		Practical skills and knowledge required in operation and maintenance of Bulk Milk Coolers
B. Tech	Dairy and related stream	4	In Dairy Science/Animal Science/Veterinary Science or related streams	0		Practical skills and knowledge required in operation and maintenance of Bulk Milk Coolers
Graduation	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 maintenance of Bulk Milk Coolers
M. V. Sc		2	In Dairy Science/Animal Science/Veterinary Science or related streams	0		Practical skills and knowledge required in operation and maintenance of Bulk Milk Coolers
Post graduation	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 maintenance of Bulk Milk Coolers

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 maintenance of Bulk Milk Coolers

Assessor Certification	
Domain Certification	**Platform Certification**
AGR/Q4204, v3.0_ Bulk Milk Cooler (BMC) Operator	MEP/Q2701, V2.0 Assessor

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 job role

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)