Model Curriculum

QP Name: Controlled Atmosphere (CA) Store Technician

QP Code: AGR/Q7508

Version: 2.0

NSQF Level: 5

Model Curriculum Version: 1.0

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	Post-Harvest Supply Chain Management
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7127
Minimum Educational Qualification and Experience	Completed 2nd year of UG OR Pursuing 2nd year of UG and continuous education OR Completed 2nd year of diploma (after 12th) OR Pursuing 2nd year of 2-year diploma after 12th OR 12th pass with 1-year vocational education & training (NTC or NAC or CITS) OR Completed 3-year diploma after 10th with 1-year relevant experience OR 12th grade pass with 2 years of relevant experience OR 10th grade pass with 4 years of relevant experience OR Previous relevant qualification of NSQF Level 4 and with minimum education as 8th grade pass with 3 years of relevant experience OR Previous relevant qualification of NSQF Level 4.5 with 1.5 years of relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	23 Years
Last Reviewed On	29/03/2023
Next Review Date	29/03/2026

NSQC Approval Date	29/03/2023
QP Version	2.0
Model Curriculum Creation Date	29/03/2023
Model Curriculum Valid Up to Date	29/03/2026
Model Curriculum Version	1.0
Minimum Duration of the Course	510 Hours
Maximum Duration of the Course	510 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:

- Explain the process of preparing the CA equipment for operation.
- Describe the process of operating the CA equipment.
- Elucidate ways to maintain the CA equipment and chamber.
- Explain the importance of following appropriate safety measures during the CA equipment operation.
- Demonstrate various practices to ensure health and safety at 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
Bridge Module	**05:00**	**00:00**	**0:00**	**00:00**	**05:00**
Module 1: Introduction to the role of a Controlled Atmosphere (CA) Store Technician	05:00	00:00	0:00	00:00	05:00
AGR/N7529: Coordinate the incoming and outgoing stock **NOS Version- 2.0** **NSQF Level- 5**	**20:00**	**35:00**	**0:00**	**00:00**	**55:00**
Module 2: Coordinate the incoming and outgoing stock	20:00	35:00	0:00	00:00	55:00
AGR/N7532: Prepare the CA equipment for operation **NOS Version- 2.0** **NSQF Level- 5**	**15:00**	**15:00**	**0:00**	**00:00**	**30:00**
Module 3: Process of preparing the CA equipment for operation	15:00	15:00	0:00	00:00	30:00
AGR/N7533: Operate the CA equipment **NOS Version- 2.0** **NSQF Level- 5**	**45:00**	**15:00**	**0:00**	**00:00**	**60:00**
Module 4: Process of operating the CA equipment	45:00	15:00	0:00	00:00	60:00

AGR/N7534: Maintain the CA equipment, chamber, cold store stock and infrastructure **NOS Version- 2.0** **NSQF Level- 5**	**30:00**	**30:00**	**0:00**	**00:00**	**60:00**
Module 5: Process of maintaining the CA equipment, chamber, cold store stock and infrastructure	30:00	30:00	0:00	00:00	60:00
AGR/N7535: Follow appropriate safety measures during the CA equipment operation **NOS Version- 2.0** **NSQF Level- 5**	**15:00**	**15:00**	**0:00**	**00:00**	**30:00**
Module 6: Process of following appropriate safety measures during the CA equipment operation	15:00	15:00	0:00	00:00	30:00
AGR/N7530: Maintain the cold store stock and infrastructure **NOS Version- 2.0** **NSQF Level- 5**	**15:00**	**15:00**	**0:00**	**00:00**	**30:00**
Module 7: Maintain and maintenance the cold store stock activities	15:00	15:00	0:00	00:00	30:00
AGR/N9903 Maintain health and safety at the workplace **NOS Version- 3.0** **NSQF Level- 4**	**05:00**	**25:00**	**0:00**	**00:00**	**30:00**
Module 8: Hygiene and cleanliness	02:00	10:00	0:00	00:00	12:00
Module 9: Safety and emergency procedures	03:00	15:00	0:00	00:00	18:00
DGT/VSQ/N0103: Employability Skills **NOS Version- 1.0** **NSQF Level- 5**	**90:00**	**00:00**	**0:00**	**00:00**	**90:00**
Module 10: Employability Skills	90:00	00:00	0:00	00:00	90:00
Total Duration	**240:00**	**150:00**	**0:00**	**00:00**	**390:00**
OJT: 120 Hours					

Module Details

Module 1: Introduction to the role of a Controlled Atmosphere (CA) Store Technician

Bridge Module

Terminal Outcomes:

- Discuss the job role of a Controlled Atmosphere (CA) Store Technician.

Duration: 05:00	Duration: 0:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Describe the size and scope of the agriculture industry and its sub-sectors. - Discuss the role and responsibilities of a Controlled Atmosphere (CA) Store Technician. - Identify various employment opportunities for a Controlled Atmosphere (CA) Store Technician.	
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
NA	

Module 2: Coordinate the incoming and outgoing stock
Mapped to AGR/N7529 v2.0

Terminal Outcomes:

- Elucidate ways to coordinate the receipt of incoming stock and the dispatch of outgoing stock.

Duration: 20:00	Duration: 35:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Explain the benefits of storing perishable agricultural and horticultural produce in the cold store. - Elucidate the importance and process of checking the incoming and outgoing stock. - State the relevant documentation, e.g. invoicing and dispatch paperwork, carried out concerning the incoming and outgoing stock . - Explain how to maintain records manually and electronically using the physical registers and the relevant computer application. - Describe the process of scheduling the outgoing stock. - Explain the importance of ensuring the availability of adequate stock for delivery to the relevant markets/buyers. - Discuss the quality standards applicable to agricultural and horticultural produce. - Explain the importance of using appropriate logistics partners for the timely dispatch and delivery of stock. - Explain the appropriate precautions to be taken to maintain the quality of produce during transit. - Elucidate the use of appropriate inventory management software application.	- Demonstrate how to check the invoice and incoming stock to ensure delivery as per the invoice. - Demonstrate the process of carrying out appropriate documentation concerning the incoming stock, e.g. issuing acknowledgement receipt for the incoming stock to the logistics partner. - Prepare sample records in the relevant computer application and physical registers concerning the incoming stock.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	

Fire extinguisher, Laptops/Computers, Installed Video camera with high resolution and recording facility, Laptops/Computers, Marker, First aid box, White board, Cold storage, Projector

Module 3: Process of preparing the CA equipment for operation
Mapped to AGR/N7532 v2.0

Terminal Outcomes:

- Describe the process of performing regular checks on the CA equipment.
- Explain the importance of following checklists and maintaining records.

Duration: 15:00	Duration: 15:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- State different types of cold storage and their working. - List the pre-operational checks required to be conducted before operating the CA equipment. - Elucidate the functions and operations of the CA equipment in the CA cold storage. - Elucidate different components, controls and functions of CA equipment. - State the appropriate adjustment to be made to the CA equipment according to the type of produce. - State the CA equipment power requirement, automation, safety devices and emergency systems. - Describe the relevant material handling procedures. - Explain the relevant occupational hazards and how to deal with them.	- Demonstrate how to check the carbon dioxide, oxygen, nitrogen and other gas levels and refill the gases as required. - Show how to examine the relevant oil/coolant/fluid levels in the relevant equipment components, e.g. radiator, and refill them as required. - Show how to inspect the filters for clogging and clean or replace them as required. - Demonstrate the process of checking the centralized Programmable Logic Controller (PLC) system for the correct functioning and performing appropriate troubleshooting. - Show how to check the absorber, valves, sensors, relief valves, analyzers, safety monitors etc., for wear and tear/ damage and correct functioning. - Demonstrate the process of repairing or replacing the absorber, valves, sensors, relief valves, analyzers, and safety monitors as appropriate. - Prepare sample records concerning the regular checks performed on the equipment.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Installed Video camera with high resolution and recording facility, Computers, First aid box, Safety shoes, Marker, Projector, White board	

Module 4: Process of operating the CA equipment
Mapped to ARG/N7533 v2.0

Terminal Outcomes:

- Explain the process of checking the produce.
- Describe the process of operating the CA equipment.

Duration: 45:00	Duration: 15:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Describe the relevant CA equipment operating and maintenance procedures. - Explain the safety measures to be taken while operating the CA equipment. - Discuss the relevant BIS/ISO/IS regulations. - Explain the Hazard Analysis Critical Control Point (HACCP) management system. - State the appropriate CA store conditions required for the safe usage of CA equipment. - State the appropriate carbon dioxide, oxygen and nitrogen levels required to maintain the shelf life of different types of produce. - Describe the benefits and methods of automation. - Explain the importance of monitoring the equipment during the operation. - Describe the ripening process for different types of produce. - Discuss the appropriate practices to be followed to minimize the deterioration and loss of produce during storage.	- Demonstrate how to check and sort out the damaged and unsuitable produce. - Demonstrate the process of operating the CA equipment in a safe and controlled manner as per the manufacturer's instructions to achieve optimum equipment performance. - Prepare sample records concerning the CA equipment operations as per the organizational procedures.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Installed Video camera with high resolution and recording facility, Computers, First aid box, Safety shoes, Marker, Projector, White board	

Module 5: Process of maintaining the CA equipment, chamber, cold store stock and infrastructure
Mapped to AGR/N7534 v2.0

Terminal Outcomes:

- Describe the process of checking and maintaining the CA equipment and chamber.
- Explain the process of checking the standby power source and safety measures.
- Elucidate ways to maintain and analyze the maintenance records.

Duration: 30:00	Duration: 30:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Discuss the working principle of N2, atmospheric gas generator machines, chillers, humidifiers, scrubbers, pressure gauges, temperature sensors, etc. - Explain the functioning of different machine parts, such as fan blades, V-belts, bearings, filters, etc. - Elucidate the specifications and functioning of gas analyzers. - Elucidate the benefits and functioning of different automation and electromechanical equipment. - Discuss the working principle of PLC and automation control system. - Explain the appropriate safety measures to be taken while carrying out repair and maintenance of the CA equipment and chamber. - Explain the importance of maintaining and analyzing the maintenance records. - State the appropriate temperature and humidity required for storing different types of agricultural and horticultural produce. - State different kinds of produce and their shelf life and perishability. - Explain the common issues experienced with agricultural and horticultural produce in a cold store and how to deal with them. - Explain the importance of inspecting	- Demonstrate how to check the N2 and atmospheric air generator filters for the correct functioning. - Show how to examine the oil levels of generators/ compressors to ensure they are as recommended. - Show how to check the scrubber, ventilation systems and humidifiers for the appropriate functioning and carry out troubleshooting as required. - Show how to check the gas pressure indicator, ethylene, CO2 and O2 concentration indicators, and temperature and humidity sensors for the correct functioning. - Demonstrate the process of carrying out the regular repair and maintenance of various CA chamber equipment. - Demonstrate the use of the appropriate components and maintenance tools and equipment as recommended by the OEM. - Show how to examine the ventilation system of the CA chamber for appropriate functioning and carrying out troubleshooting as required. - Demonstrate the process of checking the pressure relief valves for the signs of wear and tear or damage, and replacing them as required. - Prepare sample records concerning the CA equipment and chamber

the produce in the cold store regularly to ensure its quality. ● Elucidate the importance and process of labelling/ tagging the produce in the cold store. ● Explain the importance of storing different types of produce separately. ● Discuss the recommended practices to be followed to protect the produce from damage and contamination in the cold store. ● Discuss the applicable food safety standards. ● List the appropriate packing material to be used to pack different types of produce. ● Explain the importance of using the appropriate accessories, such as pallets and crates for storing the produce in the cold store. ● Explain the importance of maintaining hygiene in the cold store. ● Explain the applicable documentation requirements. ● Discuss the recommended practices to be followed for optimum space utilization in the cold store. ● Explain the repair and maintenance needs of the cold store tools, equipment and machinery.	maintenance activities. ● Show how to compare the maintenance records to identify the recurring issues.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Installed Video camera with high resolution and recording facility, Computers, First aid box, Safety shoes, Marker, Projector, White board

Module 6: Process of following appropriate safety measures during the CA equipment operation

Mapped to AGR/N7535 v2.0

Terminal Outcomes:

- Explain the importance of following CA equipment safety measures.
- Explain the importance of following safety measures in the CA chamber.
- Explain the importance of following general safety measures.

Duration: 15:00	Duration: 15:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Explain the appropriate CA equipment safety measures to be taken. - Explain the appropriate safety measures to be taken in the CA chamber. - Explain the applicable general safety measures. - Discuss the safety mechanisms available in the CA equipment and how to use them. - Explain the importance of employing safety mechanisms during CA store operations. - Explain how to operate the relevant safety equipment. - State the recommended measures to be taken to achieve machine efficiency and avoid overloading. - Explain how to deal with hazardous gas levels in a CA chamber. - Explain different types of alarms that alert about different issues, such as fire, gas leakage, etc. - Explain the importance of ensuring the availability of first aid box and relevant PPE in the CA store.	- Demonstrate the process of installing MCBs with the recommended current ratings for various CA chamber equipment. - Show how to check the pressure relief for different gas generator machines. - Demonstrate the process of installing removable access latch in the gas-tight door. - Show how to check the sealing door gaskets for wear and tear or damage. - Demonstrate the process of repairing or replacing the sealing door gaskets or coordinate with the relevant authority/ personnel to resolve complex issues. - Demonstrate the process of using the relevant Personal Protection Equipment (PPE) while working in the CA chamber. - Demonstrate the process of performing appropriate tests on the refrigerant leak detection system to ensure effective monitoring and control of leakages in the CA chamber. - Show how to check the emergency lighting for correct functioning and repair or replace them as required.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	

Installed Video camera with high resolution and recording facility, Computers, First aid box, Safety shoes, Marker, Projector, White board

Module 7: Maintain and maintenance the cold store stock activities
Mapped to ARG/N7530 v2.0

Terminal Outcomes:

- Elucidate ways to maintain the cold store stock and infrastructure.

Duration: 15:00	Duration: 15:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Explain the importance of guiding the CA store workers concerning the maintenance of produce and equipment. - List the appropriate tools and equipment required for maintenance activities in a CA store. - Elaborate on the applicable procedures and quality standards, e.g. appropriate storage and handling of produce. - Explain how to identify the instances of lapse in maintenance activities and take the appropriate corrective measures. - Elaborate on the requirement of replacing or upgrading the CA store equipment. - Explain the process of procuring new CA store equipment from the relevant vendors. - Elaborate on the requirement of maintaining appropriate documentation and records concerning procurements.	- Demonstrate the use of relevant tools and equipment required for the maintenance activities in a CA store. - Demonstrate the process of conducting appropriate checks on the CA store equipment during its procurement.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Fire extinguisher, Laptops/Computers, Installed Video camera with high resolution and recording facility, Laptops/Computers, Marker, First aid box, White board, Cold storage, Projector	

Module 8: 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: 02:00	Duration: 10:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- 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.	- 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 workplace sanitization norms. - Show how to ensure the 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 9: 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: 03:00	Duration: 15:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- List the Personal Protective Equipment (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.	- Check various areas of the workplace for leakages, water-logging, pests, fire, etc. - Demonstrate how to safely use the PPE and implement it 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.	

ASCI
Agriculture Skill Council of India

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Module 10: Employability Skills
Mapped to NOS DGT/VSQ/N0103 v1.0

Duration: 90:00
Key Learning Outcomes

Introduction to Employability Skills Duration: 3 Hours
After completing this programme, participants will be able to:
1. Outline the importance of Employability Skills for the current job market and future of work
2. List different learning and employability related GOI and private portals and their usage
3. Research and prepare a note on different industries, trends, required skills and the available opportunities

Constitutional values – Citizenship Duration: 1.5 Hours
4. 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
5. Demonstrate how to practice different environmentally sustainable practices

Becoming a Professional in the 21st Century Duration: 5 Hours
6. Discuss relevant 21st century skills required for employment
7. Highlight the importance of practicing 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
8. Create a pathway for adopting a continuous learning mindset for personal and professional development

Basic English Skills Duration: 10 Hours
9. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
10. Read and understand text written in basic English
11. Write a short note/paragraph / letter/e -mail using correct basic English

Career Development & Goal Setting Duration: 4 Hours
12. Create a career development plan
13. Identify well-defined short- and long-term goals

Communication Skills Duration: 10 Hours
14. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette
15. Write a brief note/paragraph on a familiar topic
16. Explain the importance of communication etiquette including active listening for effective communication
17. Role play a situation on how to work collaboratively with others in a team

Diversity and Inclusion Duration: 2.5 Hours
18. Demonstrate how to behave, communicate, and conduct appropriately with all genders and PwD
19. Discuss the significance of escalating sexual harassment issues as per POSH act

Financial and Legal Literacy Duration: 10 Hours
20. Discuss various financial institutions, products, and services

21. Demonstrate how to conduct offline and online financial transactions, safely and securely and check passbook/statement
22. Explain the common components of salary such as Basic, PF, Allowances (HRA, TA, DA, etc.), tax deductions
23. Calculate income and expenditure for budgeting
24. Discuss the legal rights, laws, and aids

Essential Digital Skills Duration: 20 Hours
25. Describe the role of digital technology in day-to-day life and the workplace
26. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
27. Demonstrate how to connect devices securely to internet using different means
28. Follow the dos and don'ts of cyber security to protect against cyber crimes
29. Discuss the significance of displaying responsible online behavior while using various social media platforms
30. Create an e-mail id and follow e- mail etiquette to exchange e -mails
31. Show how to create documents, spreadsheets and presentations using appropriate applications
32. utilize virtual collaboration tools to work effectively

Entrepreneurship Duration: 7 Hours
33. Explain the types of entrepreneurship and enterprises
34. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
35. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
36. Create a sample business plan, for the selected business opportunity

Customer Service Duration: 9 Hours
37. Classify different types of customers
38. Demonstrate how to identify customer needs and respond to them in a professional manner
39. Discuss various tools used to collect customer feedback
40. Discuss the significance of maintaining hygiene and dressing appropriately

Getting ready for apprenticeship & Jobs Duration: 8 Hours
41. Draft a professional Curriculum Vitae (CV)
42. Use various offline and online job search sources to find and apply for jobs
43. Discuss the significance of maintaining hygiene and dressing appropriately for an interview
44. Role play a mock interview
45. List the steps for searching and registering for apprenticeship opportunities

Module 11: On-the-Job Training

Mapped to Controlled Atmosphere (CA) Store Technician

Mandatory Duration: 120:00	Recommended Duration: 00:00
Location: On-Site	

- Elucidate the functions and operations of the CA equipment in the CA cold storage.
- Operate the CA equipment in a safe and controlled manner as per the manufacturer's instructions.
- Check the centralized Programmable Logic Controller (PLC) system for the correct functioning and perform appropriate troubleshooting.
- Prepare sample records concerning the regular checks performed on the equipment.
- Operate the CA equipment in a safe and controlled manner as per the manufacturer's instructions.
- Recycle the recyclable waste appropriately and dispose of the non-recyclable waste in an environment-friendly manner.
- Carry out the regular repair and maintenance of various CA chamber equipment.
- Use the appropriate components and maintenance tools and equipment as recommended by the OEM.
- Install MCBs with the recommended current ratings for various CA chamber equipment.
- Use the relevant Personal Protection Equipment (PPE) while working in the CA chamber.

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	*Specialization*	*Years*	*Specialization*	
Diploma	Diploma in Agriculture	4	Controlled Atmosphere (CA) Store Technician/ Operator	0		
Diploma	Diploma in Electrical/ Instrumentation	3	Controlled Atmosphere (CA) Store Technician/ Operator	0		
Graduate	Graduate	3	Controlled Atmosphere (CA) Store Technician/ Operator	0		For the school Program minimum qualification of the Trainer should be Graduate. Their Teaching experience will be considered industry experience
Certificate	CITS Pass- Electrician & Wireman Certificate	2	Controlled Atmosphere (CA) Store Technician/ Operator			
BBA	BBA	2	Controlled Atmosphere (CA) Store Technician/ Operator	0		
Graduate	Graduate (Agriculture / Horticulture/ Forestry)	2	Controlled Atmosphere (CA) Store Technician/ Operator	0		
Post Graduate	Post Graduate Diploma/ MBA- Supply Chain Management/ Agribusiness Management/ Marketing	1	Controlled Atmosphere (CA) Store Technician/ Operator	0		

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role "Controlled Atmosphere (CA) Store Technician", mapped to QP: "AGR/Q7508, v2.0", Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Trainer (Vet and Skills)", 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	
Diploma	Food processing/ Cold chain management and related streams	5	Experience in cold chain management/ SCM/ logistics or other related experience			Practical skills and knowledge required in Cold storage operations
Graduation	B.Sc / B.Tech (Agriculture/ Horticulture/ Post-Harvest/ Agri-Business/ Food processing/ Logistics/ SCM / Cold chain and related streams)	4	Experience in cold chain management/ SCM/ logistics or other related experience			Practical skills and knowledge required in Cold storage operations
Post-Graduation	M.Sc/M.Tech in food processing/ Horticulture/ Cold chain/ SCM/ logistics and related streams	2	Experience in cold chain management/ SCM/logistics or other related experience			Practical skills and knowledge required in Cold storage operations
Post-Graduation Post-Graduate Diploma/ MBA	Agri-Business/ SCM/ Logistics/ Cold chain Food processing	2	Experience in cold chain management/ SCM/logistics or other related experience			Practical skills and knowledge required in Cold storage operations
PhD	Post-Harvest/ Agri Business/ Logistics/ SCM/ Horticulture/ Food processing and related streams	1	Experience in cold chain management/ SCM/logistics or other related experience			Practical skills and knowledge required in Cold storage operations

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role "Controlled Atmosphere (CA) Store Technician", mapped to QP: "AGR/Q7508, v2.0", Minimum accepted score is 80%	Certified for the Job Role: "Assessor (Vet and Skills)", mapped to the Qualification Pack: "MEP/Q2701, v2.0", 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. <u>Multiple Choice Questions</u>: To assess basic knowledge (Objective/Subjective)
2. <u>Viva:</u> To assess awareness on processes (Oral and/or written questioning)
3. <u>Practical:</u> 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.

An individual must have adequate knowledge and skills to perform a specific task, weightage for different aspects of the assessment is 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 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 the 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 practice 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 questions, etc. which will test the trainee on his theoretical knowledge of the subject.

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 theory, practical and viva assessments will be carried out on the same day. In case of a greater number of candidates, the number of assessors and venue facilitation be increased and facilitated

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, 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 the 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:

- GeoTagging 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

- o Candidate feedback sheet
- o Assessment checklist for assessor
- o Candidate Aadhar/ID card verification
- o Pictures of the classroom, labs to check the availability of adequate equipment's and tool to conduct the training and assessment
- o Pictures and videos of Assessment, training feedback and infrastructure.

- Apart from the Assessor, a Technical assistant is 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 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 have 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 were 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 is downloaded by our internal backend team and saved in Repository. The repository consists of scheme-wise folders. These scheme-wise folders have two 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
Declarative Knowledge	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.
Key Learning Outcome	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 task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
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