

# Model Curriculum

## CA Store Technician/Operator

**SECTOR: AGRICULTURE & ALLIED**  
**SUB-SECTOR: AGRICULTURE CROP PRODUCTION**  
**OCCUPATION: POST-HARVEST SUPPLY CHAIN  
MANAGEMENT**  
**REF ID: AGR/Q7508, V1.0**  
**NSQF LEVEL: 5**



## Certificate

### **CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS**

is hereby issued by the

**AGRICULTURE SKILL COUNCIL OF INDIA**

for the

**MODEL CURRICULUM**

Complying to National Occupational Standards of  
Job Role/Qualification Pack: **'CA Store Technician/Operator'** OP No. **'AGR/Q7508 NSQF Level 5'**

Date of Issuance: June 30<sup>th</sup>, 2015

Valid up to: March 31<sup>st</sup>, 2017

\* Valid up to the next review date of the Qualification Pack

  
S. S. Arora  
Authorised Signatory  
(Agriculture Skill Council of India)

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# CA Store Technician/Operator

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "**CA Store Technician/Operator**", in the "**Agriculture & Allied**" Sector/Industry and aims at building the following key competencies amongst the learner

<b>Program Name</b>	<b>CA Store Technician/Operator</b>		
<b>Qualification Pack Name &amp; Reference ID. ID</b>	AGR/Q7508, v1.0		
<b>Version No.</b>	1.0	<b>Version Update Date</b>	
<b>Pre-requisites to Training</b>	Diploma/Degree in Electrical/Instrumentation		
<b>Training Outcomes</b>	<p><b>After completing this programme, participants will be able to:</b></p> <ul style="list-style-type: none"> <li>• <b>Set up the CA Equipment for operation:</b> Setting up of the machine, carbon dioxide, oxygen parameters</li> <li>• <b>Operate the CA Equipment:</b> Inspection of fruits, operation of equipment, Quality standards</li> <li>• <b>Adjust the Machines:</b> Machine adjustments, basic repair of CA Machines (CO<sub>2</sub> Deputor, Nitrogen Generator, Air Compressors, Gas Analyzer, Chamber Testing (Air Tightness), Sensors for temperature and humidity, CA Pipelines)</li> <li>• <b>Undertake safety measures:</b> Well versed with health and safety measures in terms of personal safety and others as well.</li> </ul>		

This course encompasses 4 out of 4 National Occupational Standards (NOS) of “CA Store Technician/ Operator” Qualification Pack issued by “Agriculture Skill Council of India”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<b>Introduction</b>  <b>Theory Duration</b> (hh:mm) 5:00  <b>Practical Duration</b> (hh:mm) 0:00  <b>Corresponding NOS Code</b>	<ul style="list-style-type: none"> <li>Understand General Discipline in the class room (Do's &amp; Don'ts)</li> <li>Study the Scope of preservation/storage of packed fruits and vegetables</li> <li>Understand Role of a CA Store Technician</li> </ul>	Laptop, white board, marker, projector
2	<b>Prepare CA equipments for operation</b>  <b>Theory Duration</b> (hh:mm) 20:00  <b>Practical Duration</b> (hh:mm) 28:00  <b>Corresponding NOS Code</b> AGR/N7532	<ul style="list-style-type: none"> <li>Understand the operation of CA equipment</li> <li>Understand the shelf life of the horticulture produce</li> <li>Understand the storage conditions for different horticulture produce</li> <li>Understand the different parts, components and controls of the machine</li> <li>Set up the machine for operation</li> <li>Understand and maintain the required factors like Humidity level, gas level(nitrogen, carbon dioxide, oxygen), oil level, radiators, air filters, temperature level</li> <li>Understand the working procedure of scrubbers, coolant</li> </ul>	Laptop, white board, marker, projector
3	<b>Operate CA equipments</b>  <b>Theory Duration</b> (hh:mm) 20:00  <b>Practical Duration</b> (hh:mm) 37:00  <b>Corresponding NOS Code</b> AGR/N7533	<ul style="list-style-type: none"> <li>Understand the safe machine operating procedure</li> <li>Gain knowledge about different parts and its working procedures, components, controls of the equipment</li> <li>Operate the CA machines</li> <li>Understand the quality standards to be maintained</li> <li>Understand the Fruit ripening process</li> <li>Adjust the temperature as per the requirement of fruits</li> <li>Maintain the operational records</li> <li>Understand the Trouble shooting of CA equipments</li> </ul>	Laptop, white board, marker, projector,
4	<b>Perform daily maintenance of CA equipments</b>  <b>Theory Duration</b>	<ul style="list-style-type: none"> <li>Understand the need for daily maintenance of CA equipments</li> <li>Check all CA Controlled machines</li> <li>Check CA gas pressure meter</li> <li>Check temperature of CA</li> </ul>	Laptop, white board, marker, projector,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	(hh:mm) 15:00 <b>Practical Duration</b> (hh:mm) 29:00 <b>Corresponding NOS Code</b> AGR/N7534	<ul style="list-style-type: none"> <li>• Check ventilation</li> <li>• Check stand by power source and safety measures</li> <li>• Check scrubbers, humidifiers, ethylene concentration</li> <li>• Maintain the record on gases, temperature, humidity reading</li> </ul>	
5	<b>Undertake safety measures on CA equipments' operation</b>  <b>Theory Duration</b> (hh:mm) 20:00 <b>Practical Duration</b> (hh:mm) 36:00 <b>Corresponding NOS Code</b> AGR/N9903	<ul style="list-style-type: none"> <li>• Understand the safety measures of machine</li> <li>• Maintain general safety measures of CA room</li> <li>• Maintain a clean &amp; efficient work environment</li> <li>• Render appropriate emergency procedures</li> <li>• Basic knowledge of Disaster Management</li> </ul>	Laptop, white board, marker, projector, safety shoes, first aid box
	<b>Total Duration:</b>  <b>Theory Duration</b> (hh:mm) <b>80:00</b>  <b>Practical Duration</b> (hh:mm) <b>130:00</b>	<b>Unique Equipment Required:</b> Laptop, white board, marker, projector, safety shoes, first aid box, Protective Clothes, Apron, CA Store Equipments	

Grand Total Course Duration: **210 Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by [Agriculture Skill Council of India](#))

## Trainer Prerequisites for Job role: “CA Store Technician/ Operator” mapped to Qualification Pack: “AGR/Q7508, v1.0”

Sr. No.	Area	Details
1	<b>Description</b>	Trainer is responsible for educating the trainees- set up the CA Equipment for day’s work by conducting pre-start procedures, operate the equipment to maintain the proper carbon dioxide and oxygen parameters. The individual is well conversant with machine adjustments and takes up basic repair of CA Machines (CO <sub>2</sub> Deputor, Nitrogen Generator, Air Compressors, Gas Analyzer, Chamber Testing (Air Tightness), Sensors for temperature and humidity, CA Pipelines) to keep it operational during critical storage time.
2	<b>Personal Attributes</b>	Trainer should be Subject Matter Expert, he/ she should have good communication skills, leadership skills, observation skills, practical oriented skills
3	<b>Minimum Educational Qualifications</b>	ITI Preferred
4a	<b>Domain Certification</b>	Certified for Job Role: <u>“CA Store Technician/Operator”</u> mapped to QP: <u>“AGR/Q7508,v1.0”</u> . Minimum accepted score is 80%.
4b	<b>Platform Certification</b>	Certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/Q1402”. Minimum accepted score is 70%
5	<b>Experience</b>	<ul style="list-style-type: none"> <li>ITI with 5+ Years of experience in relevant field</li> </ul>

### Annexure: Assessment Criteria

<b>Assessment Criteria</b>	
<b>Job Role</b>	CA Store Technician/ Operator
<b>Qualification Pack</b>	AGR/Q7508, v1.0
<b>Sector Skill Council</b>	Agriculture

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5	To pass the Qualification Pack, every trainee should score a minimum of 70% in aggregate
6	The marks are allocated PC wise; however, every NOS will carry a weight age in the total marks allocated to the specific QP



Assessable Outcome	Assessment Criteria	Total Mark (400)	Out Of	Marks Allocation	
				Theory	Skills Practical
1.AGR/N7532 :Prepare CA Equipments for operation	PC1.check CA machines performance visually.	<b>80</b>	5	2	3
	PC2.check all the parts of the controlled atmosphere equipment		5	2	3
	PC3.lookout for signs of possible problems such as carbon dioxide and oxygen level etc.		10	5	5
	PC4.check temperature level of the equipment		5	3	2
	PC5.check the bearings, chains and belts		5	3	2
	PC6.check humidity level of the equipment		5	2	3
	PC7.check the gas level of the equipment		5	2	3
	PC8.check the scrubbers		5	2	3
	PC9.check for oil level in the engine		5	3	2
	PC10.check the nitrogen level.		5	3	2
	PC11.check the radiators to see if they are full of water /coolant		10	6	4
	PC12.check the air filters for clean lines and adjust it properly if required		5	2	3
	PC13.fill the machines with fuel		5	3	2
	PC14.check for carbon dioxide and oxygen level		5	2	3
			<b>80</b>	<b>40</b>	<b>40</b>

2.AGR/N7533 :Operate CA Equipments	PC1.visually inspect the fruit	<b>120</b>	10	5	5
	PC2.check the condition of the fruit e.g. fully or half ripe fruit		20	10	10
	PC3.check the variety of the fruits when arrive at store		20	10	10
	PC4.turn on the machine and check all the displays, indicators and meters		5	2	3
	PC5.check that there is no warning display signal		5	2	3
	PC6.check the temperature and humidity level of the CA store.		5	3	2
	PC7.operate the controlled atmosphere equipment in safe, controlled and correct manner as per the SOP/manufacturer's manual		20	10	10
	PC8.achieve maximum machine efficiency at optimum fuel consumption		20	10	10
	PC9.maintain operational records		15	8	7
			<b>120</b>	<b>60</b>	<b>60</b>
3.AGR/N7534 :Perform daily maintenance of CA Equipments	PC1.check the filters of N <sub>2</sub> and atmospheric air generator	<b>120</b>	10	5	5
	PC2.check the oil levels of generators/ compressors		5	2	3
	PC3.check the belts tensions of air handling units once in month		5	3	2
	PC4.check the scrubber is working properly		5	2	3
	PC5.check ventilation systems are working properly		5	3	2
	PC6.check humidifiers are		10	5	5

	working properly				
	PC7.check the pressure indicators of CA rooms		5	2	3
	PC8.check temperature and humidity of CA rooms		5	2	3
	PC9.check ethylene concentration in CA room		10	5	5
	PC10.check the temperature sensors of the CA rooms		5	2	3
	PC11.check ventilation system of CA room is working properly		5	3	2
	PC12.check leakage of gas from CA room		5	3	2
	PC13.check seals of CA rooms		5	3	2
	PC14.check Rubber gaskets of doors		10	5	5
	PC15.check the standby power source working properly		5	2	3
	PC16.check water level of safety relief valves		5	3	2
	PC17.check pressure relief valves		5	2	3
	PC18.take all the reading of gases pressure twice in a day		5	2	3
	PC19.take all the temp and RH reading twice in a day		5	3	2
	PC20.take all the gaseous levels twice in a day		5	3	2
			<b>120</b>	<b>60</b>	<b>60</b>
4.AGR/N7535 :Undertake safety measures on CA	PC1.check all the MCB current levels of all the machine	<b>80</b>	4	2	2

Equipment's operation	PC2.check all the pressure relief for different gas generator machines	6	3	3
	PC3.keep dry ice cylinder nearer to every machine	6	3	3
	PC4.check proper earthing of equipment's power supply	4	2	2
	PC5.install removable access latch in the gas tight door with self-containing breathing equipment	4	2	2
	PC6.place ladder inside the room nearer to refrigeration unit	4	2	2
	PC7.place danger sign on each gastight door	4	2	2
	PC8.check the rubber gaskets of sealing door	4	2	2
	PC9.break seals C A room notify the higher authority.	5	2	3
	PC10.check the oxygen level inside the CA room up to 21 %	5	2	3
	PC11.Keep ready at least two set of tested breathing apparatus ready	3	1	2
	PC12.review the symptoms of Asphyxia	3	1	2
	PC13.ensure that the repair person should take the breathing apparatus and the oxygen tank is full on with breathing air	5	3	2
	PC14.make sure the backup person should be there when the repair person is working inside CA room	5	3	2
	PC15.ensure that the precaution alarm should be active for ethylene gas excess in CA room	4	2	2

	PC16.ensure that the general safety alarm should be on Red or work under progress		5	3	2
	PC17.ensure that the person should wear the safety jacket before entering into the CA rooms		2	1	1
	PC18.check all the safety measures of CA rooms		2	1	1
	PC19.check the first aid box near to CA rooms		5	3	2
			<b>80</b>	<b>40</b>	<b>40</b>
	<b>Total</b>	<b>400</b>	<b>400</b>	<b>200</b>	<b>200</b>
	<u>Percentage Weightage:</u>			<u>50%</u>	<u>50%</u>
	<u>Minimum Pass% to qualify (aggregate):</u>			<u>60%</u>	