



# Model Curriculum

**QP Name: Sugar Processing Operator**

**QP Code: FIC / Q7102**

**QP Version: 1.0**

**NSQF Level: 4**

**Model Curriculum Version: 1.0**

Food Industry Capacity and Skill Initiative (FICSI)  
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## Training Parameters

<b>Sector</b>	Food Processing
<b>Sub-Sector</b>	Confectionery
<b>Occupation</b>	Processing- Confectionery
<b>Country</b>	India
<b>NSQF Level</b>	4
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/2141.1800, NCO-2015/8160.3700, NCO-2015/8160.3800, NCO-2015/8160.3900, NCO-2015/8160.5300, NCO-2015/2131.1400
<b>Minimum Educational Qualification and Experience</b>	<ol style="list-style-type: none"> <li>1. 12th-grade pass or Equivalent</li> <li>OR</li> <li>2. Completed 2nd year of 3-year diploma (after 10th)</li> <li>OR</li> <li>3. 10th Grade Pass with 3 years relevant experience in Food Processing Industry</li> <li>OR</li> <li>4. Previous relevant Qualification of NSQF Level 3.0 with 3 years relevant experience in the Food Processing Industry.</li> </ol>
<b>Pre-Requisite License or Training</b>	Not Applicable
<b>Minimum Job Entry Age</b>	18 years
<b>Last Reviewed On</b>	29/05/2024
<b>Next Review Date</b>	29/05/2027
<b>NSQC Approval Date</b>	30/05/2024
<b>QP Version</b>	1.0
<b>Model Curriculum Creation Date</b>	18/10/2023
<b>Model Curriculum Valid Up to Date</b>	29/05/2027
<b>Model Curriculum Version</b>	1.0
<b>Minimum Duration of the Course</b>	990 hours (240+690+60)

**Maximum Duration of the Course**

1230 hours  
(240+690+60+60+60+60+60)

# Program Overview

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

## Training Outcomes

At the end of the program, the participants will be able to:

- Prepare for Production
- Carry out Sugar Processing
- Carry out Maintenance and Troubleshooting
- Implement Health and Safety practices at the workplace
- Understand Employability Skills

## Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory

NOS and Module Details	Theory	Practical	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
	Duration	Duration			
<i>FIC/N9026: Prepare the Production</i>	18	12	00	00	30
NOS Version 1.0					
NSQF Level 4					
Module 2: Prepare the work area for sugarcane processing	18	12	00	00	30
<i>FIC/N7103: Carry out sugar processing</i>	30	90	00	00	120
NOS Version 1.0					
NSQF Level 4					
Module 1: Introduction to Food Processing Sector and the Job of 'Sugar Processing Technician'	8	00	00	00	08
Module 3: Carry out pre-processing and processing of Sugar	11	40	00	00	51
Module 9: Carry out quality inspection and package goods for dispatch	11	50	00	00	61
<i>FIC/N7104: Carry out Maintenance and Troubleshooting</i>	10	20	00	00	30
NOS Version No. 1.0					
NSQF Level 4					

Module 10: Carry out maintenance and troubleshooting	10	20	00	00	30
<b>FIC/N9906: Apply food safety guidelines in food processing</b>	<b>10</b>	<b>20</b>	<b>00</b>	<b>0</b>	<b>30</b>
<b>NOS Version No. 1.0</b>					
<b>NSQF Level 4</b>					
Module 11: Practice food safety, GMP, and personal hygiene at the workplace	05	10	0	0	15
Module 12: Apply food safety practices at workplace	05	10	0	0	15
<b>DGT/VSQ/N0101 – Employability Skills</b>	<b>12</b>	<b>18</b>	<b>00</b>	<b>00</b>	<b>30</b>
<b>NOS Version No. 1.0</b>					
<b>NSQF Level 4</b>					
Module 13: Employability Skills	12	18	00	00	30
<b>Total Duration</b>	<b>80</b>	<b>160</b>	<b>690</b>	<b>00</b>	<b>930</b>

### Elective

<b>FIC/N7105: Clarification of sugarcane juice in a sugar mill</b>	<b>45:00</b>	<b>15:00</b>	<b>00:00</b>	<b>00:00</b>	<b>60:00</b>
<b>NOS Version No. 1.0</b>					
<b>NSQF Level 4</b>					
Module 04: Clarification of sugarcane Juice in a sugar mill	45:00	15:00	00:00	00:00	60:00
<b>FIC/N7106: Perform evaporation of sugarcane Juice in a sugar mill</b>	<b>45:00</b>	<b>15:00</b>	<b>00:00</b>	<b>00:00</b>	<b>60:00</b>
<b>NOS Version No. 1.0</b>					
<b>NSQF Level 4</b>					
Module 05: Perform evaporation of sugarcane Juice in a sugar mill	45:00	15:00	00:00	00:00	60:00
<b>FIC/N7107: Perform crystallization of sugar syrup in a sugar mill</b>	<b>45:00</b>	<b>15:00</b>	<b>00:00</b>	<b>00:00</b>	<b>60:00</b>
<b>NOS Version 1.0</b>					
<b>NSQF Level 4.0</b>					

Module 06: Perform crystallization of sugar syrup in a sugar mill	45:00	15:00	00:00	00:00	60:00
<b>FIC/N7108: Perform refining of crystal sugar</b>	<b>45:00</b>	<b>15:00</b>	<b>00:00</b>	<b>00:00</b>	<b>60:00</b>
<b>NOS Version 1.0</b>					
<b>NSQF Level 4.0</b>					
Module 07: Perform refining of crystal sugar	45:00	15:00	00:00	00:00	60:00
<b>FIC/N7109: Perform drying of crystal sugar</b>	<b>45:00</b>	<b>15:00</b>	<b>00:00</b>	<b>00:00</b>	<b>60:00</b>
<b>NOS Version 1.0</b>					
<b>NSQF Level 4.0</b>					
Module 08: Perform drying of crystal sugar	45:00	15:00	00:00	00:00	60:00

# Module Details

## Module 1: Introduction to Food Processing Sector and the Job of ‘Sugar Processing Operator’

*Mapped to FIC/N7103 v1.0*

### Terminal Outcomes:

- Describe the food processing industry and its sub-sectors in brief
- Discuss the roles and responsibilities of Food Samper

<b>Duration:</b> 08:00	<b>Duration:</b> 00:00
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Define food processing and Sugar Processing Industry and its growth trends</li> <li>• Discuss the career opportunities available for Sugar Processing Operators in the food processing industry</li> <li>• Explain the processes and terminologies used in sugar processing mills</li> <li>• Discuss the standard business etiquette and code of conduct in the food processing industry</li> <li>• Discuss the career opportunities available to Sugar Processing Technician in the food processing industry</li> </ul>	
<b>Classroom Aids:</b>	
Whiteboard, Marker, Duster, Projector, Laptop, PowerPoint Presentation	
<b>Tools, Equipment, and Other Requirements</b>	
Nil	



## Module 2: Prepare for production

Mapped to FIC/N9026 v1.0

Terminal Outcomes:

- Discuss the standard practices to be followed for production
- Demonstrate the tasks to be performed at the workplace for planning the production

<b>Duration: 18:00</b>	<b>Duration: 12:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Elucidate production planning process.</li> <li>• Discuss analysis and interpretation of various process charts, product flow charts, etc.</li> <li>• Explain the resource management process.</li> <li>• Calculate procedure to estimate manpower and raw material.</li> <li>• List down equipment type and its use.</li> <li>• Explain the capacity utilization calculation.</li> <li>• Discuss the organizational policies and SOP on cleanliness.</li> <li>• List down the basic concept of food safety and hygiene.</li> <li>• Describe the operating procedure and general maintenance of food production machineries.</li> <li>• State waste management procedures.</li> <li>• List down the methods to inspect tools, equipment and machinery.</li> <li>• Discuss the procedure to allot work or responsibility to the team.</li> </ul>	<ul style="list-style-type: none"> <li>• Apply work requirements by obtaining instructions from the supervisor.</li> <li>• Instructions: process chart, product flow chart, formulation, chart, etc.</li> <li>• Prepare, plan and prioritize tasks as per work schedule</li> <li>• Tasks: inspect, clean, maintain, verify the area and tools, etc.</li> <li>• Calculate the manpower and material requirements as per the work requirement</li> <li>• Material: raw materials and packaging materials.</li> <li>• Show the required quantity of raw materials, packaging materials, equipment, and manpower for production.</li> <li>• Demonstrate capacity utilization of machinery with respect to the processing time, production order, and batch size for each product.</li> <li>• Perform cleaning and maintain the work area as per organizational procedures.</li> <li>• Perform cleaning and maintain the machines and tools and sanitize them as per the organization's specifications and standards.</li> <li>• Show disposal of the waste material at designated place safely.</li> <li>• Display the tools, equipment, and machinery to ascertain suitability for use.</li> <li>• Conduct role play to report information such as faulty tools and equipment to the concerned authority.</li> </ul>
<b>Classroom Aids</b>	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
<b>Tools, Equipment and Other Requirements</b>	

cleaning machines, extruder, vegetable washer, vegetable peeler, pulveriser, fryer, roaster, blender, strainer, canning machineries blender, Measurement Cane; Weighing balance, Timer, Gas with Burner; Knives, spatulas, packing wrap rolls, measuring cup and spoons, utensils, ladle, ladle with holes, digital hygrometer, Muslin Cloth; Weighing Machine; Milk Stirrer; Thermometer; Test Tube (Glass); Test Tube Holder; Gas with Burner.



## Module 3: Carry out Pre-processing and processing of sugar

*Mapped to FIC/N7103 v1.0*

### Terminal Outcomes:

- Carry out Pre-processing of Resources
- Perform processing of Sugar

<b>Duration: 11:00</b>	<b>Duration: 40:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Detail the safety norms of defined area and inform the safety in charge if not suitable</li> <li>• Explain the process flow chart/formulation chart for products to be produced</li> <li>• Explain how to inspect the quantity and quality of the received raw material against specification to ensure it meets the quality standards</li> <li>• List the steps to maintain inventory while effectively storing raw materials in designated areas</li> <li>• State ways to prepare and set up the machines for sugar processing</li> <li>• Discuss how to conduct equipment inspection and maintenance to ensure good operator order</li> <li>• State, process to prepare quality control tools and devices for monitoring essential factors</li> <li>• List sugar extraction equipment, such as cane preparatory devices, mills, etc. to extract the juice from sugarcane</li> <li>• Explain how to control the evaporation process to lower the water content and raise sugar concentration</li> <li>• Detail crystallization process for creating sugar crystals</li> <li>• State drying process to completely dry sugar crystals</li> <li>• Explain ideal conditions and temperatures to ensure product quality</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate how to interpret the various flowcharts</li> <li>• Demonstrate through a role play production planning process</li> <li>• Demonstrate the methods to calculate the required manpower and materials</li> <li>• Demonstrate through videos the function of various tools used for sugarcane processing</li> <li>• Demonstrate how to conduct visual inspection of raw materials</li> <li>• Demonstrate through a role-play the various steps in inventory management in the sugar processing industry</li> <li>• Demonstrate the crystallization process using the sugar solution in the lab</li> <li>• Through the role play elucidate the GMP standards followed in sugar industries</li> <li>• Demonstrate the evaporation process using the sugar solution in the lab</li> <li>• Show the centrifugation process using a centrifugal machine and water with sugar granules</li> <li>• Demonstrate sedimentation precipitation and centrifugation using milk of lime. Add some color dye to it to show the particles settling down.</li> <li>• With the help of a role play enumerate the FSSAI standard 4 guidelines</li> <li>• Demonstrate through the video the various processes in refined sugar production.</li> <li>• Demonstrate through a video how to clean and sanitize workplace and equipment</li> <li>• Demonstrate through the video the waste disposal methods followed in the sugar industry</li> </ul>

<b>Classroom Aids:</b>	
Training kit (Trainer guide, Presentations), Whiteboard, Marker, Projector, Laptop, Presentation slides, Participant Handbook, etc.	
<b>Tools, Equipment, and Other Requirements</b>	
Crushers, Mills, Centrifuge, Evaporators, Clarifiers, Filters, Conveyors, Heaters, Cooling Systems, Pumps, Valves, Heat exchangers, Vacuum pans, Crystallizers, Drying units, etc	

## Module 4: Clarification of sugarcane juice

*Mapped to FIC/7105 v1.0*

### Terminal Outcomes:

- Prepare tools for clarification process at a sugar mill
- Carryout clarification of sugarcane juice
- Perform post-production cleaning and regular maintenance of equipment

<b>Duration: 45:00</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>• Discuss the tools used in the clarification process</li> <li>• Explain the correct usage of PPE kits</li> <li>• Explain the safety procedures to be followed while working with the high-temperature equipment</li> <li>• Discuss the use of DSM/rotary screen</li> <li>• Explain the process of removing the mud particles and bag acillo</li> <li>• Discuss the primary heaters and the suitable temperatures to kill the Leuconostoc bacteria</li> <li>• Explain the process of precipitation and coagulation of particles</li> <li>• Discuss the chemicals used for precipitation and coagulation of particles</li> <li>• Explain the significance of using high-quality milk of lime</li> <li>• Discuss the importance of maintaining the correct pH level of the sugarcane solution</li> <li>• Explain the role of Sulphur-di-oxide in sugar processing</li> <li>• Explain flocculants and how it helps in sedimentation of particles</li> <li>• Advantages of flocculation process</li> <li>• Discuss the working of the settling tanks</li> <li>• Explain the term sludge</li> <li>• Discuss the removal of the skimmed of decanted extract</li> <li>• Discuss the residual filtrate cake disposal system</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate through a video the tools used in clarification of sugar cane juice</li> <li>• Show through a video clipping the correct use of the PPE kits</li> <li>• Demonstrate the safety procedures to be followed while working with the high temperature machineries</li> <li>• Demonstrate through video the clarification process in a sugar mill</li> <li>• Demonstrate through video the cleaning and sanitizing the process equipment Demonstrate the possible breakdowns of the equipment and how to repair them</li> </ul>

<ul style="list-style-type: none"> <li>• Discuss the working of multiple effect evaporators</li> <li>• Explain the documentation activities with regard to the clarification process</li> <li>• Explain the cleaning of process equipment</li> <li>• Elucidate the GMP health and safety standards to be followed while cleaning the equipment</li> <li>• Discuss the signification of sanitizing the work area and process equipment before and after work</li> <li>• Explain the tips to handle the maintenance needs/repairs of equipment that are identified during cleaning activity</li> <li>• Discuss the documentation of equipment maintenance and cleaning activities Discuss the disposal of waste materials gathered during the cleaning process</li> </ul>	
<b>Classroom Aids:</b>	
Training kit (Trainer guide, Presentations), Whiteboard, Marker, Projector, Laptop, Presentation, Participant Handbook, calculator etc.	
<b>Tools, Equipment, and Other Requirements</b>	
Juice heaters, Liming and sulphitation tank, Clarification-tank, phosphoric acid storage tank and dosing pump, Sulphur burner, Clarifier, lime kiln, multiple effect evaporators, mixing equipment, filter press, filter press, rotary vacuum filter.	

## Module 5: Evaporation of sugarcane juice in a sugar mill

*Mapped to FIC/N7106 v1.0*

### Terminal Outcomes:

- Prepare tools for the evaporation process
- Carryout evaporation of sugarcane juice at the sugar mill
- Perform post-production cleaning and regular maintenance of equipment

<b>Duration:45.00</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>• Discuss the tools used in the evaporation process</li> <li>• Discuss the chemicals and raw materials used in the process</li> <li>• Explain the safety procedures to be followed while working with the high-temperature equipment</li> <li>• Explain the working of the evaporators and the settings of the controls</li> <li>• Explain the energy efficiency of the evaporators</li> <li>• Discuss the anti-sealants used during the evaporation process and their significance</li> <li>• Discuss the working of the multiple-effect evaporators in a controlled environment</li> <li>• Explain the Brix of clear juice and syrup</li> <li>• Discuss liming and sulphation</li> <li>• Explain the quality parameters to be checked at the end of the evaporation process</li> <li>• Explain the steps involved in storing them in a vessel until the next process</li> <li>• Explain the documentation activities with regard to the evaporation process</li> <li>• Explain the cleaning of evaporation process equipment</li> <li>• Elucidate the GMP health and safety standards to be followed while cleaning the equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate through a video the tools used in evaporation of sugar cane juice</li> <li>• Demonstrate through a video the working of multiple effect evaporators</li> <li>• Show through a video clipping the correct use of the PPE kits</li> <li>• Demonstrate the safety procedures to be followed while working with the high temperature machineries</li> <li>• Demonstrate through video the cleaning and sanitizing the process equipment</li> <li>• Demonstrate the possible breakdowns of the equipment and how to repair them</li> </ul>



<ul style="list-style-type: none"> <li>• Discuss the signification of sanitizing the work area and process equipment before and after work</li> <li>• Explain the tips to handle the maintenance needs/repairs of equipment that are identified during cleaning activity</li> <li>• Discuss the documentation of equipment maintenance and cleaning activities</li> <li>• Discuss the disposal of waste materials gathered during the cleaning process</li> <li>• Discuss the importance of preheating the sugarcane juice</li> <li>• Explain the criteria for selection of anti scalants</li> <li>• Discuss the FSSAI schedule 4 standards with regard to goods manufacturing</li> </ul>	
<b>Classroom Aids:</b>	
Training kit (Trainer guide, Presentations), Whiteboard, Marker, Projector, Laptop, Presentation, Participant Handbook, calculator etc.	
<b>Tools, Equipment, and Other Requirements</b>	
Heat exchangers, multiple effect evaporators, condensers, steam boilers, pumps, tanks and vessels	

## Module 6: Crystallization of sugar syrup

*Mapped to FIC/N7107 v1.0*

### Terminal Outcomes:

- Prepare the tools for the crystallization process
- Carryout crystallization of concentrated sugar syrup at the sugar mill
- Perform post-production cleaning and regular maintenance of equipment

<b>Duration: 45:00</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>• Discuss the tools used in the crystallization process</li> <li>• Discuss the chemicals and raw materials used in the process</li> <li>• Explain the safety procedures to be followed while working with the high-temperature equipment</li> <li>• Explain the working of the tools used in the crystallization process</li> <li>• Discuss the various steps in the crystallization process</li> <li>• Discuss the term massecuite, mother liquor, graining, solubility of sucrose, supersaturation, Coefficient of supersaturation, Exhaustion</li> <li>• Explain the use of the centrifugal machine in the crystallization process</li> <li>• Explain the documentation activities about the crystallization process</li> <li>• Discuss the purpose of the drying station</li> <li>• Explain the cleaning and drying of equipment used</li> <li>• Elucidate the GMP health and safety standards to be followed while cleaning the equipment</li> <li>• Discuss the signification of sanitizing the work area and process equipment before and after work</li> <li>• Explain the tips to handle the maintenance needs/repairs of equipment that are identified during cleaning activity</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate through a video the tools used in crystallization of sugar cane juice</li> <li>• Show through a video clipping the correct use of the PPE kits</li> <li>• Demonstrate through the video working of the centrifuges</li> <li>• Demonstrate the safety procedures to be followed while working with the high temperature machineries</li> <li>• Demonstrate through video the cleaning and sanitizing the process equipment Demonstrate the possible breakdowns of the equipment and how to repair them</li> </ul>

- Discuss the documentation of equipment maintenance and cleaning activities
- Discuss the disposal of waste materials gathered during the cleaning process
- Discuss the factors that influence the crystallization of sugar
- Discuss the byproduct molasses
- Explain the industry best practices for manufacturing (GMP)
- Discuss the FSSAI schedule 4 standards with regard to goods manufacturing

**Classroom Aids:**

Training kit (Trainer guide, Presentations), Whiteboard, Marker, Projector, Laptop, Presentation, Participant Handbook, calculator etc.

**Tools, Equipment, and Other Requirements**

Vacuum pans, crystallizers, seeding equipment, agitators and stirrers, centrifugal machine

## Module 7: Refining of crystal sugar

*Mapped to FIC/N7108 v1.0*

### Terminal Outcomes:

- Organize the raw materials for the refining process
- Carryout refining of sugar from sugar crystals
- Perform post-production cleaning and regular maintenance of equipment

<b>Duration: 45:00</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>• Discuss the process of procuring the raw sugar for refining</li> <li>• Explain the clarification, evaporation, crystallization, and drying of the processed sugar</li> <li>• Explain the tools and types of machinery used and check the refining machinery are in working condition</li> <li>• Discuss the cleaning of the work area before the refining process</li> <li>• Discuss the importance of using health and safety kits in the work area</li> <li>• Explain the use of different vibrating screens / Sievers with different mesh sizes for grading and the grading process</li> <li>• Explain the quality check of the graded sugar</li> <li>• Explain the cleaning techniques of equipment used in refining</li> <li>• Elucidate the GMP health and safety standards to be followed while cleaning the equipment</li> <li>• Discuss the significance of sanitizing the work area and process equipment before and after work</li> <li>• Explain the tips to handle the maintenance needs/repairs of equipment that are identified during cleaning activity</li> <li>• Discuss the documentation of equipment maintenance and cleaning activities</li> <li>• Discuss the disposal of waste materials gathered during the cleaning process</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate through a video the various stages of processing a sugar cane in sugar mills</li> <li>• Demonstrate the use of PPE kits</li> <li>• Demonstrate the process of grading sugar crystals using different meshes in the grader</li> <li>• Demonstrate through a video the cleaning and drying of equipment used in refining of sugar crystals</li> <li>• Using a role play illustrate the health and safety guidelines to be followed in the work area</li> </ul>

- Discuss the FSSAI schedule 4 standards with regard to goods manufacturing

**Classroom Aids:**

Training kit (Trainer guide, Presentations), Whiteboard, Marker, Projector, Laptop, Presentation, Participant Handbook, etc.

**Tools, Equipment, and Other Requirements**

Sizing and grading equipment, screens and meshes of different sizes, centrifugal Machine, clarification equipment, ion exchange systems, carbon filtration units

## Module 8: Drying of refined sugar

*Mapped to FIC/N7019 v1.0*

### Terminal Outcomes:

- Prepare the tools for drying the raw sugar
- Carryout drying process in a sugar mill
- Perform post-production cleaning and regular maintenance of equipment

<b>Duration:45:00</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 tools and types of machinery used in the drying of crystals of sugar</li> <li>• Discuss the cleaning of the work area before the refining process</li> <li>• Discuss the importance of using health and safety kits in the workplace</li> <li>• Discuss the operating instructions of the tools and monitor the setting</li> <li>• Discuss the complete cycle of the drying process</li> <li>• Discuss the quality control check parameters</li> <li>• Explain the process of documentation of the drying activities</li> <li>• Explain the cleaning and drying of equipment used</li> <li>• Elucidate the GMP health and safety standards to be followed while cleaning the equipment</li> <li>• Discuss the significance of sanitizing the work area and process equipment before and after work</li> <li>• Explain the tips to handle the maintenance needs/repairs of equipment that are identified during cleaning activity</li> <li>• Discuss the documentation of equipment maintenance and cleaning activities</li> <li>• Discuss the disposal of waste materials gathered during the cleaning process</li> <li>• Discuss the importance of drying of the sugar crystals</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate through a video the complete process of drying of sugar crystals</li> <li>• Show through a video clipping the correct use of the PPE kits</li> <li>• Demonstrate the safety procedures to be followed while working with the high temperature machineries</li> <li>• Demonstrate through video the cleaning and drying of the process equipment Demonstrate the various drying methods of the refined sugar</li> </ul>

- Explain the different types of drying methods
- Discuss the significance of maintaining the approved moisture level and the ill effects of high levels of moisture
- Discuss the FSSAI schedule 4 standards with regard to goods manufacturing

**Classroom Aids:**

Training kit (Trainer guide, Presentations), Whiteboard, Marker, Projector, Laptop, Presentation, Participant Handbook, etc.

**Tools, Equipment, and Other Requirements**

Different types of driers, sanitizers, cleaning agents

## Module 9: Carry out quality inspection and package goods for dispatch

*Mapped to FIC/N7103 v1.0*

### Terminal Outcomes:

- Conduct quality tests and inspections
- Carry out packaging and dispatch

<b>Duration: 11:00</b>	<b>Duration: 50:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the clarifying and filtering operations to confirm the removal of contaminants and suspended particles</li> <li>• State routine turbidity and suspended solids testing to evaluate the working of filtration and clarifying process</li> <li>• Detail the evaporation and concentration processes to decrease water content and raise sugar concentration</li> <li>• State how to regulate brix (sugar concentration) testing to ensure it complies with specified requirements</li> <li>• Explain the sugar recovery rate and separation efficiency and ways to analyze it</li> <li>• State quality check parameters on purity, color, sucrose content and particle size</li> <li>• State the significance of keeping packaged materials dry and spotless to avoid contamination or damage</li> <li>• Explain the functioning of filling machines to precisely weigh and fill packing containers with required amount of sugar</li> <li>• Define filling procedure to avoid overfilling or underfilling</li> <li>• Explain about appropriate details of the product by employing labelling and coding machines</li> <li>• Illustrate ways to keep thorough records of the packing procedure and revisions made to the package</li> <li>• Describe specifics of packaged sugar goods and shipment or delivery correspond to customer's demands</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate how to monitor the efficiency of crushers or mills by observing essential factors while extracting sugar cane juice</li> <li>• Illustrate way to examine extracted juice to assess its initial parameters</li> <li>• Show which parameters are analysed of the crystal samples periodically to verify that size and purity are within standards</li> <li>• Demonstrate how to check product's temperature and moisture content on a regular basis</li> <li>• Walk through how filling machines operate to weigh and fill packing containers</li> <li>• Demonstrate the functioning of labelling and coding machines</li> <li>• Show how to organize stacking and palletization of packed goods for effective storage and transportation</li> <li>• Walk through the plan and way to manage loading of packaged sugar goods effectively and safely onto vehicles or shipping containers</li> <li>• Demonstrate how to resolve any packing or dispatch-related problems and notify to supervisors</li> </ul>
<b>Classroom Aids:</b>	
Training kit (Trainer guide, Presentations), Whiteboard, Marker, Projector, Laptop, Presentation slides, Participant Handbook, etc.	



#### **Tools, Equipment, and Other Requirements**

Spectrophotometer, Refractometer, Colorimeter, Particle size analyzer, Microscope, pH meter, Titrator, Turbidity meter, Hydrometer, Moisture analyzer, Sieves, Filling machines, Labelling machines, Conveyors, Weighing scales, Palletizers, Stretch wrapping machines, Carton sealers, Barcoding equipment, Pallet jacks, Forklifts, etc.

## Module 10: Carry out maintenance and troubleshooting

*Mapped to FIC/N7104 v1.0*

### Terminal Outcomes:

- Carry out preventive planned maintenance
- Perform troubleshooting of equipment issues
- Carry out documentation to ensure compliance

<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>• Explain why it is important to check for wear, damage, or malfunction on a regular basis on all processing machinery</li> <li>• State how to prevent performance issues by keeping equipment away from contaminants</li> <li>• Describe process to replace filters and screens per maintenance plan recommendations in order to avoid clogging</li> <li>• Define the significance of appropriate parts for loose connections or corrosion</li> <li>• Exemplify safety precautions and how to verify they are working as intended</li> <li>• State the significance of adherence to preventive maintenance schedule created by maintenance department</li> <li>• Explain the need and ways to identify equipment problems that can assist in comprehending source of issue</li> <li>• check wiring, connections and device parts for signs of wear, damage and loose connections</li> <li>• Discuss equipment operating circumstances</li> <li>• Elucidate performance of equipment and collect information by using diagnostic tools and equipment</li> <li>• Simplify instrument readings and use it for troubleshooting along with co-workers</li> <li>• Exemplify how to gather information and keep records of each manufacturing batch's information</li> <li>• Characterize correctly and legibly recording the findings of quality testing in quality</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate ways to perform operational and visual inspections to identify any anomalies or possible problems</li> <li>• Show how to lubricate appropriately moving components to decrease friction and prevent wear</li> <li>• Illustrate ways to maintain alignment and ensure proper assembly of parts</li> <li>• Show how to examine or replace drive systems, chains, and conveyor belts to avoid belt or chain failures</li> <li>• Exhibit how sensors, switches and control systems are operating properly</li> <li>• Display ways to monitor cooling and heating systems for technical issues</li> <li>• Show how to conduct methodical testing and isolation of components or subsystems to identify precise location and cause of problem</li> <li>• Demonstrate how to create daily or shift production logs to track sugar processing status</li> <li>•</li> </ul>

control documents, sampling process followed in production line and ways to maintain records of normal maintenance procedures	
<b>Classroom Aids:</b>	
Training kit (Trainer guide, Presentations), Whiteboard, Marker, Projector, Laptop, Presentation slides, Participant Handbook, etc.	
<b>Tools, Equipment, and Other Requirements</b>	
Wrenches, Screwdrivers, Pliers, Multimeters, Infrared thermometers, Lubrication Devices, Diagnostic instruments, Alignment tools, Inspection mirrors, Bolt and nut tightening tools, Replacement parts and components, etc.	

## Module 11: Practice food safety, GMP and personal hygiene at workplace

*Mapped to FIC/N9906 v1.0*

### Terminal Outcomes:

- Apply personal hygiene and follow Good Manufacturing practices at workplace.
- Implement Food Safety and pre-requisite programs (PRP) at workplace

<b>Duration: 05:00</b>	<b>Duration: 10:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Define hazards and risks</li> <li>• Recall the various types of health and safety equipment available in an organisation and the methods for obtaining them</li> <li>• Discuss the organisational health and safety policies and procedures</li> <li>• Discuss site relevant documented procedure for Personal Hygiene and Visitor/ Contractor rules</li> <li>• Explain work instructions at levels of employee inside a food manufacturing site</li> <li>• Ensure timed planning and participation of relevant training and awareness sessions on personal hygiene, GMP and related topics</li> <li>• Explain the importance of timely medical examination from a prescribed and authorized doctor and to comply with the guidelines of Schedule IV as described in Food Safety Standard Authority of India (FSSAI) guidelines</li> <li>• State how to follow a site relevant documented procedure and area wise work instructions for Good Manufacturing Practices (GMP) to be followed on the site</li> <li>• List validated Do's &amp; Don'ts inside a food manufacturing firm</li> <li>• State process flow charts, HACCP summary plan and critical process parameters in each and respective areas of the production line</li> <li>• Explain how to identify the material requirements such as manufacturing equipment's, Utensils and other</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate the steps to be performed for implementing good manufacturing practices (GMP)</li> <li>• Demonstrate how to follow work instructions at levels of employee inside a food manufacturing site and ensure that the relevant instructions are well communicated and being followed at the fixed timelines</li> <li>• Show how to fill data in daily monitoring checklist related to personal hygiene, food safety and GMP</li> <li>• Illustrate process to follow man and materials movement throughout the production facility, to restrict unwanted hazards to cross contaminate the products which are being manufactured in the facility</li> <li>• Show how to tag and number all the equipment, machinery, tools, and other processing aids to keep a proper traceability of the product being manufactured and handled at site</li> <li>• Demonstrate process of record keeping and documentation such as Daily Monitoring Sheets, Batch Traceability Records, machine records, product parameters, process control parameters etc.</li> </ul>

processing aids, cleaning chemicals, cleaning work instructions in all the relevant areas of manufacturing facility	
<b>Classroom Aids:</b>	
Training kit (Trainer guide, Presentations), Whiteboard, Marker, Projector, Laptop, Presentation slides, Participant Handbook, etc.	
<b>Tools, Equipment, and Other Requirements</b>	
GMP format and guidelines, allergen manual, personal hygiene guidelines, etc.	

## Module 12: Apply food safety practices at workplace

*Mapped to FIC/N9906 v1.0*

### Terminal Outcomes:

- List the food safety practices at the workplace and the ways to implement them
- Demonstrate the steps to be followed to implement food safety procedures effectively

<b>Duration: 05:00</b>	<b>Duration: 10:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• List the various types of health and safety hazards present in the environment</li> <li>• Discuss the possible causes of risk, hazard, or accident at the workplace</li> <li>• Elucidate the standard practices and precautions used to control and prevent risks, hazards, and accidents at the workplace</li> <li>• Explain requirements to maintain updated facilities, equipment, and tools to minimize the risks associated with the products being handled at the site</li> <li>• State the importance of using protective equipment and clothing for specific tasks and work conditions</li> <li>• Discuss the role of organizational protocols in preventing accidents and hazards</li> <li>• Discuss the significance of various types of hazard and safety signs</li> <li>• Explain FSSAI Schedule IV requirements related to: Pest Control, Cleaning and Sanitation, Utilities, Waste Disposal, Prevention of Cross Contamination, allergen management, corrective action, preventive actions, food operation control etc.</li> <li>• Discuss the relevance of checking critical control points and product parameters</li> <li>• Explain importance of record keeping and documentation such as daily monitoring sheets, cleaning sheets, parameters etc.</li> <li>• Discuss how to report any food safety and GMP issue to supervisor, if any</li> </ul>	<ul style="list-style-type: none"> <li>• Apply appropriate techniques to deal with hazards safely and appropriately</li> <li>• Perform steps for checking critical control points and product parameters</li> <li>• Show how to record keeping and documentation such as daily monitoring sheets, cleaning sheets, parameters etc.</li> <li>• Demonstrate appropriate ways to respond to an accident situation or medical emergency promptly and appropriately.</li> <li>• Perform the steps to be followed during emergency and evacuation procedures.</li> </ul>
<b>Classroom Aids:</b>	

Training kit (Trainer guide, Presentations), Whiteboard, Marker, Projector, Laptop, Presentation slides, Participant Handbook, etc.

**Tools, Equipment, and Other Requirements**

Helmet, gloves, rubber mat, ladder, neon tester, leather or asbestos gloves, flame proof aprons, flameproof overalls buttoned to neck, cuffless (without folds) trousers, reinforced footwear, helmets/hard hats, cap and shoulder covers, ear defenders/plugs, safety boots, knee pads, particle masks, glasses/goggles/visors, hand and face shields, machine guards, residual current Devices, shields, dust sheets, respirator

## Module 13: Employability Skills

### Mapped to DGT/VSQ/N0101 v1.0

#### Terminal Outcomes:

- Discuss Employability skills, Constitutional values, digital, financial, and legal literacy
- Explain about diversity and Inclusion, communication skills, and customer service
- State the relevance of entrepreneurship skills and how to be ready for jobs and apprenticeship

<b>Duration: 12:00</b>	<b>Duration: 18:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss the importance of Employability Skills in meeting the job requirements</li> <li>• Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen</li> <li>• Show how to practice different environmentally sustainable practices</li> <li>• Discuss 21st-century skills.</li> <li>• Display a positive attitude, self-motivation, problem-solving, time management skills and a continuous learning mindset in different situations</li> <li>• Use appropriate basic English sentences/phrases while speaking</li> <li>• Discuss the significance of reporting sexual harassment issues in time</li> <li>• Discuss the significance of using financial products and services safely and securely</li> <li>• Explain the importance of managing expenses, income, and savings</li> <li>• Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws</li> <li>• Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely</li> <li>• Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate how to communicate in a well-mannered way with others</li> <li>• Demonstrate working with others in a team</li> <li>• Show how to conduct oneself appropriately with all genders and PwD</li> <li>• Show how to operate digital devices and use the associated applications and features, safely and securely</li> <li>• Create a biodata</li> </ul>



<p>financial challenges</p> <ul style="list-style-type: none"> <li>• Differentiate between types of customers</li> <li>• Explain the significance of identifying customer needs and addressing them</li> <li>• Discuss the significance of maintaining hygiene and dressing appropriately</li> <li>• Use various sources to search and apply for jobs</li> <li>• Discuss the significance of dressing up neatly and maintaining hygiene for an interview</li> <li>• Discuss how to search and register for apprenticeship opportunities</li> </ul>	
<b>Classroom Aids:</b>	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
<b>Tools, Equipment and Other Requirements</b>	
Computer (PC) with latest configurations – and Internet connection with standard operating system and standard word processor and worksheet software (Licensed) (all software should either be latest version or one/two version below) , UPS, Scanner cum Printer, Computer Tables, Computer Chairs, LCD Projector, White Board 1200mm x 900mm	

## Module 14: Clarification of sugarcane juice -On-the-Job Training

*Mapped to FIC/N7105 v1.0*

### Terminal Outcomes:

- Prepare tools for the clarification process at a sugar mill
- Carryout clarification of sugarcane juice
- Perform post-production cleaning and regular maintenance of equipment

### On the Job Training-

Mandatory Duration:< 690 hrs>	Recommended Duration:
Location: on site	
<ul style="list-style-type: none"> <li>• understand the organization's policies and procedures with regard to the sugar cane processing</li> <li>• Understand the tools used in the clarification of sugar cane juice</li> <li>• Go through the operation manual of the equipment</li> <li>• Understand the working of the equipment involved in the clarification process</li> <li>• Understand the safety procedures to be followed while working with the high-temperature machineries as per the GMP guidelines</li> <li>• Practice the use of the PPE kits while at work</li> <li>• Understand the importance of the clarification process in a sugar mill</li> <li>• Observe the different stages in the clarification process in a sugar mill</li> <li>• Study the various chemicals used and their role in the clarification process</li> <li>• Learn to evaluate the chemical composition of raw sugar cane juice and clarified juice</li> <li>• understand the cleaning and sanitizing of the process equipment</li> <li>• experience the possible breakdowns of the equipment and how to repair them</li> <li>• understand the waste disposal measures adopted by the organization</li> <li>• understand the quality control measures followed by the organization in each process</li> <li>• FSSAI schedule 4 standards about manufacturing food products</li> </ul>	

## Module 15: Evaporation of sugarcane juice in a sugar mill -On the job Training

*Mapped to FIC/N7106 v1.0*

### Terminal Outcomes:

- Prepare tools for the evaporation process
- Carryout evaporation of sugarcane juice at the sugar mill
- Perform post-production cleaning and regular maintenance of equipment

Mandatory Duration:< 690 hrs>	Recommended Duration:
Location: on site	
<ul style="list-style-type: none"> <li>• understand the organization's policies and procedures with regard to the sugar cane processing</li> <li>• Understand the tools used in the evaporation of sugar cane juice</li> <li>• Go through the operation manual of the equipment used in the evaporation process</li> <li>• Understand the working of the equipment involved in the evaporation process</li> <li>• Understand the safety procedures to be followed while working with the high-temperature machineries as per the GMP guidelines</li> <li>• Practice the use of the PPE kits while at work</li> <li>• Understand the importance of the evaporation process in a sugar mill</li> <li>• Understand the settings of the evaporators used for this process: settings like temperature, pressure, and flow rates</li> <li>• Understand the use of foaming agents and the most commonly used foaming agents</li> <li>• Understand how the multiple-effect evaporators work</li> <li>• Understand the industry-approved concentration level of the sugar syrup at the end of the evaporation process (approved Brix levels)</li> <li>• Understand the documentation methods followed for the evaporation process</li> <li>• understand the cleaning and sanitizing of the process equipment</li> <li>• experience the possible breakdowns of the equipment and how to repair them</li> <li>• understand the waste disposal measures adopted by the organization</li> <li>• understand the quality control measures followed by the organization in each process</li> <li>• FSSAI schedule 4 standards with regard to manufacturing food products</li> </ul>	

## Module 16: Crystallization of sugar syrup -On-the-Job Training

*Mapped to FIC/N7107 v1.0*

### Terminal Outcomes:

- Prepare the tools for the crystallization process
- Carryout crystallization of concentrated sugar syrup at the sugar mill
- Perform post production cleaning and regular maintenance of equipment

Mandatory Duration:<690 hrs>	Recommended Duration:
Location: on site	
<ul style="list-style-type: none"> <li>• Understand the organization policies and procedures with regard to the sugar cane processing</li> <li>• Understand the tools used in the crystallization of sugar cane juice</li> <li>• Go through the operation manual of the equipment used in the crystallization process</li> <li>• Understand the working of the equipment involved in the crystallization process</li> <li>• Understand the safety procedures to be followed while working with the high-temperature machineries as per the GMP guidelines</li> <li>• Practice the use of the PPE kits while at work</li> <li>• Understand the need for a crystallization process in a sugar mill</li> <li>• Understand the working of the crystallizers (large vessels with agitators or mixers) in the sugar mill</li> <li>• Understand the working of the vacuum pan and understand their settings</li> <li>• Understand the documentation methods followed for the crystallization process</li> <li>• Understand the cleaning and sanitizing of the process equipment</li> <li>• Experience the possible breakdowns of the equipment and how to repair them</li> <li>• Understand the waste disposal measures adopted by the organization</li> <li>• Understand the quality control measures followed by the organization in each process</li> <li>• FSSAI schedule 4 standards with regard to manufacturing food products</li> </ul>	

## Module 17: Refining of crystal sugar-On the Job Training

*Mapped to FIC/N7108 v1.0*

### Terminal Outcomes:

- Organize the raw materials for the refining process
- Carryout refining of sugar from sugar crystals
- Perform post-production cleaning and regular maintenance of equipment

Mandatory Duration:< 690 hrs>	Recommended Duration:
Location: on site	
<ul style="list-style-type: none"> <li>• Understand the organization's policies and procedures with regard to the sugar cane processing</li> <li>• Understand the tools used in the refining of sugar crystals</li> <li>• Go through the operation manual of the equipment used in the refining process</li> <li>• Understand the working of the equipment involved in the refining process</li> <li>• Understand the safety procedures to be followed while working with the high-temperature machinery as per the GMP guidelines</li> <li>• Practice the use of the PPE kits while at work</li> <li>• Understand the need for refining sugar in a sugar mill</li> <li>• Understand the grading of sugar crystals using vibrating screens and sieves with different mesh sizes</li> <li>• Understand the documentation methods followed for the refining process</li> <li>• Understand the quality check process after the refining process</li> <li>• Understand the cleaning and sanitizing of the process equipment</li> <li>• Experience the possible breakdowns of the equipment and how to repair them</li> <li>• Understand the waste disposal measures adopted by the organization</li> <li>• Understand the quality control measures followed by the organization in each process</li> <li>• FSSAI schedule 4 standards about manufacturing food products</li> </ul>	

## Module 18: Drying of refined sugar -On-the-Job Training

*Mapped to FIC/N7109 v1.0*

### Terminal Outcomes:

- Prepare the tools for drying the raw sugar
- Carryout drying process in a sugar mill
- Perform post-production cleaning and regular maintenance of equipment

Mandatory Duration:< 690 hrs>	Recommended Duration:
Location: on site	
<ul style="list-style-type: none"> <li>• Understand the organization's policies and procedures with regard to the sugar cane processing</li> <li>• Understand the tools used in drying of raw sugar</li> <li>• Go through the operation manual of the equipment used in the raw sugar drying process</li> <li>• Understand the working of the equipment involved in the drying process</li> <li>• Understand the safety procedures to be followed while working with high-temperature types of machinery as per the GMP guidelines</li> <li>• Practice the use of the PPE kits while at work</li> <li>• Understand the need for drying of raw sugar</li> <li>• Understand the working of the driers and how to maintain the temperature in the drier</li> <li>• Understand the desired moisture content level at the end of the drying process</li> <li>• Understand the documentation methods followed for the drying of raw sugar</li> <li>• Understand the quality control measures followed in the organization about the drying process</li> <li>• Understand the cleaning and sanitizing of the process equipment</li> <li>• Experience the possible breakdowns of the equipment and how to repair them</li> <li>• Understand the waste disposal measures adopted by the organization</li> <li>• Understand the quality control measures followed by the organization in each process</li> <li>• FSSAI schedule 4 standards about manufacturing food products</li> </ul>	

## Annexure

### Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
<b>B.Sc or graduate/B.Tech/BE</b>	Food technology or food Engineering/Home Science and allied subjects	3	Food processing	1	Food processing	
<b>M.Sc/M.Tech/ME</b>	Food technology or food engineering	2	Food processing	1	Food processing	
<b>Diploma /certificate course</b>	Food Technology / Food Engineering /packaging/ Hotel Management or allied science	4	Food processing	1	Food processing	

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Sugar Processing Operator" mapped to QP: "FIC/Q7102, v1.0". Minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: "Trainer" (VET & SKILLS), mapped to the Qualification Pack: "MEP/Q2601", V.2. Minimum accepted SCORE IS 80 % as per SSC guidelines.

## Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
M.Sc/M.Tech/ME	Food technology or food engineering	2	Food processing	1	Food processing	
B.Sc or graduate/B.Tech/BE	Food technology/ Home Science	3	Food processing	2	Food processing	
Diploma	Hotel management/ Food Science/ Home Science	4	Food processing	2	Food processing	

Assessor Certification	
Domain Certification	Platform Certification
"Sugar Processing Operator", "FIC/Q7102, V1.0", Minimum accepted score is 80%	Recommended that the Assessor is certified for the Job Role: "Assessor" (VET & SKILLS), mapped to the Qualification Pack: "MEP/Q2701", V-2. Minimum accepted SCORE IS 80 % as per SSC guidelines.



## Assessment Strategy

This section includes the processes involved in identifying, gathering and interpreting information to evaluate the learner on the required competencies of the program.

Assessment will be based on the concept of Independent Assessors empanelled with Assessment Agencies, identified, selected, trained and certified on Assessment techniques. These assessors would be aligned to assess as per the laid down criteria.

Assessment Agency would conduct assessment only at the training centres of Training Partner or designated testing centers authorized by FICSI.

Ideally, the assessment will be a continuous process comprising of three distinct steps:

A. Mid- term assessment

B. Term / Final Assessment

Each National Occupational Standard (NOS) in the respective QPs will be assigned weightage. Therein each Performance Criteria in the NOS will be assigned marks for theory and / or practical based on relative importance and criticality of function.

This will facilitate preparation of question bank / paper sets for each of the QPs. Each of these papers sets / question bank so created by the Assessment Agency will be validated by the industry subject matter experts through FICSI, especially with regard to the practical test and the defined tolerances, finish, accuracy etc.

The following tools are proposed to be used for final assessment:

- i. Written Test: This will comprise of (i) True / False Statements (ii) Multiple Choice Questions (iii) Matching Type Questions. Online system for this will be preferred.
- ii. Practical Test: This will comprise a test job to be prepared as per project briefing following appropriate working steps, using necessary tools, equipment and instruments. Through observation it will be possible to ascertain candidate's aptitude, attention to details, quality consciousness etc. The end product will be measured against the pre-decided MCQ filled by the Assessor to gauge the level of his skill achievements.
- iii. Structured Interview: This tool will be used to assess the conceptual understanding and the behavioural aspects as regards the job role and the specific task at hand.

## 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>	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 <b>upon the completion of the training.</b>
<b>Terminal Outcome</b>	Terminal outcome is a statement of what a learner will know, understand and be able to do <b>upon the completion of a module.</b> A set of terminal outcomes help to achieve the training outcome.

## Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
TVET	Technical and Vocational Education and Training
SOP	Technical and Vocational Education and Training
OH&S	Occupational Health and Safety
PPE	Personal Protective Equipment
HACCP	Hazard Analysis and Critical Control Points
VACCP	Vulnerability Assessment Critical Control Points
TACCP	Threat Assessment Critical Control Points
FSSAI	Food Safety and Standards Authority of India
FIFO	First In First Out
FEFO	First Expire First Out
GMP	Good Manufacturing Practices
GHP	Good Hygiene Practices
CPR	Cardiopulmonary Resuscitation