

Qualification Pack



Refrigeration Equipment Maintenance Specialist

QP Code: LSC/Q9101

Version: 2.0

NSQF Level: 5

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LSC/Q9101: Refrigeration Equipment Maintenance Specialist

Brief Job Description

The individual at work prepares refrigeration equipment maintenance schedule checklist and monitors its preventive maintenance. The person is also responsible to oversee service and repair of cold chain equipment like condenser, compressor and evaporators, provide manpower and material resources to maintenance technicians, train plant engineers on handling and maintenance of refrigeration equipment.

Personal Attributes

The job requires the individual to have good eye sight, good physical fitness, be vigilant, have ability to work in low temperature environment for long duration and willingness to work by wearing protective gear.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [LSC/N9101: Plan the maintenance of refrigeration equipment](#)
2. [LSC/N9102: Monitor maintenance of refrigeration equipment](#)
3. [LSC/N9103: Oversee service and repair of refrigeration equipment](#)
4. [LSC/N9104: Undertake training for plant engineers](#)
5. [LSC/N9901: Maintain food and personnel safety, health and hygiene in cold storage plant](#)
6. [LSC/N9902: Communicate effectively with colleagues and clients](#)
7. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

Qualification Pack (QP) Parameters

Sector	Logistics
Sub-Sector	Cold Chain Logistics Solutions
Occupation	Maintenance
Country	India
NSQF Level	5

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Credits	19
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL
Minimum Educational Qualification & Experience	<p>Completed 2nd year of UG (UG Diploma) (/Diploma in Mechanical / Electrical / Electronical / Refrigeration engineering) OR Pursuing 2nd year of UG (/ Diploma and continuous education in Mechanical / Electrical / Electronical / Refrigeration engineering) OR 12th grade Pass with 2 Years of experience cold chain experience in handling refrigeration equipment OR Certificate-NSQF (Reefer Vehicle Operator - Level 4) with minimum education as 8th Grade pass) with 3 Years of experience relevant experience in cold storage/ refrigeration/ air conditioning equipment maintenance operations as an apprentice or in regular employment</p>
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	21 Years
Last Reviewed On	NA
Next Review Date	28/02/2026
NSQC Approval Date	28/02/2023
Version	2.0
Reference code on NQR	QG-05-TW-00237-2023-V1-LSC
NQR Version	1.0

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LSC/N9101: Plan the maintenance of refrigeration equipment

Description

This OS unit is about planning and preparing maintenance schedules as per requirements, and manage resources accordingly

Scope

The scope covers the following :

- Prepare preventive maintenance schedule checklist for main refrigeration equipment components
- Manage manpower resources for maintenance
- Handle supply of materials to the maintenance technicians Range: compressor, condenser, evaporator, temperature and humidity sensor

Elements and Performance Criteria

Preparing preventive maintenance schedule checklist

To be competent, the user/individual on the job must be able to:

- PC1.** prepare work programme and schedules for maintenance of evaporator, condenser and compressor
- PC2.** prioritize maintenance as per legislative laws, organization requirements, resources, and environment
- PC3.** plan electrical system maintenance at least once in five years as per the Institute of Electrical and Electronics Engineers Code of Practice
- PC4.** plan to check evaporators for defrosting and coil surface for dust accumulation
- PC5.** ensure to check electrical connections for corroded terminals
- PC6.** ensure that the maintenance plan checks oil safety and high pressure controls of compressor units
- PC7.** record the schedules for preventive maintenance
- PC8.** plan activities so as to minimize disruption to normal working
- PC9.** ensure to schedule seasonal maintenance
- PC10.** make contingency plans for emergency situations regarding working of the equipment

Managing manpower resources for maintenance

To be competent, the user/individual on the job must be able to:

- PC11.** identify resources for maintenance based on the skills required
- PC12.** allocate resources for each maintenance activity
- PC13.** make contingency plans for variations in labour availability

Handling supply of materials to the maintenance technicians

To be competent, the user/individual on the job must be able to:

- PC14.** provide checklists for maintenance activities
- PC15.** provide information on priority and deadlines for the tasks, so that losses are minimized
- PC16.** provide necessary tools, components and protective gear to carry out maintenance activities

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Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organizational policies and guidelines
- KU2.** reporting structure
- KU3.** communication with relevant people in the organization to take their buy-in for maintenance schedule
- KU4.** organization safety and security procedures of refrigerant usage
- KU5.** procedures to follow during emergency maintenance issues
- KU6.** formats for maintenance checklists used in the organization
- KU7.** roles and responsibilities of labourers in the cold storage area
- KU8.** problems that may arise to different departments in the organization due to maintenance activities and their solutions
- KU9.** importance of prior planning for maintenance of refrigeration equipment
- KU10.** finalization requirements for maintenance
- KU11.** Preparation of preventive maintenance schedules and checklists
- KU12.** optimal temperature and humidity conditions required for various products handled by cold chain, for example, Marine products: -18 to -21 degrees Fruits and vegetables: -1 to 15 degrees; 95% to 98% RH; 65% to 75% RH for onion and garlic; 40% to 50% RH for beans, dry fruits and vegetables Dairy: -20 to +4 degrees Dry fruits: 4 to 10 degrees Pharma - chemicals and vaccines: 4 to 10 degrees
- KU13.** product specific hygiene requirements
- KU14.** extent of ethylene production by each product and sensitivity of ethylene exposure to products
- KU15.** how to prioritize activities in maintenance scheduling
- KU16.** necessary resources for each activity
- KU17.** safety standards and precautions to be ensured
- KU18.** procedures for isolating electrical systems (wiring to the equipment) safely
- KU19.** bonding of electrical system to the components after repair
- KU20.** selection of accessories and tools required for maintenance

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read equipment manual and understand its working
- GS2.** read safety instructions
- GS3.** read legislative laws concerning equipment maintenance
- GS4.** read and understand equipment manufacturer's maintenance instructions
- GS5.** prepare maintenance schedules in the format followed by the organization
- GS6.** communicate to workers clearly about the requirements in maintenance activities

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- GS7.** communicate to other departments like operations, packing and dispatch, quality check, admin and finance which get impacted due to equipment maintenance activities
- GS8.** decide on priorities of activities planned
- GS9.** consider relative costs and benefits of multiple solutions
- GS10.** resolve emergency situations in equipment functioning
- GS11.** plan maintenance activities as per standard requirements and manufacturer's instructions
- GS12.** plan equipment service based on its working condition
- GS13.** plan resources by selecting, training, and ensuring discipline amongst them
- GS14.** re-schedule tasks in case of delays or requirements by other departments in the organization
- GS15.** handle allotment of tasks to workers in case of staff shortage or delays in activities
- GS16.** interpret equipment diagram and information to identify which components need maintenance
- GS17.** assess working condition of refrigeration equipment
- GS18.** plan activities to minimize effects on normal working of the organization
- GS19.** interpret electrical system diagrams
- GS20.** identify faults in the refrigerant equipment working
- GS21.** use reasoning to identify alternative solutions
- GS22.** assign criticality to the equipment problem, to plan and prioritize maintenance or repair tasks

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Preparing preventive maintenance schedule checklist</i>	20	46	-	-
PC1. prepare work programme and schedules for maintenance of evaporator, condenser and compressor	2	5	-	-
PC2. prioritize maintenance as per legislative laws, organization requirements, resources, and environment	2	5	-	-
PC3. plan electrical system maintenance at least once in five years as per the Institute of Electrical and Electronics Engineers Code of Practice	2	5	-	-
PC4. plan to check evaporators for defrosting and coil surface for dust accumulation	2	5	-	-
PC5. ensure to check electrical connections for corroded terminals	2	5	-	-
PC6. ensure that the maintenance plan checks oil safety and high pressure controls of compressor units	2	4	-	-
PC7. record the schedules for preventive maintenance	2	4	-	-
PC8. plan activities so as to minimize disruption to normal working	2	4	-	-
PC9. ensure to schedule seasonal maintenance	2	4	-	-
PC10. make contingency plans for emergency situations regarding working of the equipment	2	5	-	-
<i>Managing manpower resources for maintenance</i>	6	12	-	-
PC11. identify resources for maintenance based on the skills required	2	4	-	-
PC12. allocate resources for each maintenance activity	2	4	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. make contingency plans for variations in labour availability	2	4	-	-
<i>Handling supply of materials to the maintenance technicians</i>	4	12	-	-
PC14. provide checklists for maintenance activities	2	4	-	-
PC15. provide information on priority and deadlines for the tasks, so that losses are minimized	1	4	-	-
PC16. provide necessary tools, components and protective gear to carry out maintenance activities	1	4	-	-
NOS Total	30	70	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	LSC/N9101
NOS Name	Plan the maintenance of refrigeration equipment
Sector	Logistics
Sub-Sector	Cold Chain Logistics Solutions
Occupation	Maintenance
NSQF Level	5
Credits	3
Version	2.0
Last Reviewed Date	NA
Next Review Date	28/02/2026
NSQF Clearance Date	28/02/2023

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LSC/N9102: Monitor maintenance of refrigeration equipment

Description

This OS unit is about monitoring maintenance activities of refrigeration equipment to ensure that they are completed as per the plan

Scope

The scope covers the following :

- Ensure maintenance activities are completed as per time, budget and quality
- Ensure maintenance records are up-to-date
- Co-ordinate regularly with the workforce Range: compressor, condenser, evaporator, temperature and humidity sensor

Elements and Performance Criteria

Ensuring maintenance activities are completed as per time, budget and quality

To be competent, the user/individual on the job must be able to:

- PC 1.** inspect regularly to ensure maintenance activities are done as per quality requirements
- PC 2.** inspect regularly to ensure maintenance activities are completed timely
- PC 3.** inspect regularly to ensure maintenance activities are done within the costs planned
- PC 4.** ensure that the quality of the products stored under refrigeration is not harmed while equipment components are being checked
- PC 5.** ensure that there is safe discharge of ammonia, so that excess refrigerant is discharged safely (not inside cold room and away from work area)
- PC 6.** ensure to keep drains in the cold area free of debris
- PC 7.** ensure to check operations of door seals regularly
- PC 8.** monitor the sequence of activities as per the schedule
- PC 9.** ensure workers are using protective gear during maintenance or repair
- PC 10.** ensure workers leave the area safe and clean after performing maintenance activities
- PC 11.** ensure that the equipment is calibrated correctly before use

Ensuring maintenance records are up-to-date

To be competent, the user/individual on the job must be able to:

- PC 12.** assign a resource to maintain records of refrigeration equipment maintenance activities regularly
- PC 13.** conduct regular checks on maintenance log to see if it is current
- PC 14.** instruct concerned person to update records if it is not latest
- PC 15.** report to all concerned people in the organization in case the schedule cannot be met

Co-ordinating regularly with the workforce

To be competent, the user/individual on the job must be able to:

- PC 16.** carry out walk around inspection regularly to monitor activities of subordinates

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- PC 17.** communicate with workers as often as needed to ensure maintenance schedule is followed
- PC 18.** allocate parallel tasks to handle different components of refrigeration equipment like evaporator, compressor and condenser, wherever possible
- PC 19.** observe the work efficiency of the workforce and identify training needs wherever necessary

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organizational policies and guidelines
- KU2.** reporting structure
- KU3.** organization safety and security procedures of refrigerant usage
- KU4.** procedures to follow during emergency maintenance issues
- KU5.** roles and responsibilities of labourers in the cold storage area problems that may arise to different departments in the organization due to maintenance activities and their solutions
- KU6.** Recording and documenting maintenance activities and data
- KU7.** legal requirements involved in preparing relevant documents
- KU8.** optimal temperature and humidity conditions required for various products handled by cold chain, for example, Marine products: -18 to -21 degrees Fruits and vegetables: -1 to 15 degrees; 95% to 98% RH; 65% to 75% RH for onion and garlic; 40% to 50% RH for beans, dry fruits and vegetables Dairy: -20 to +4 degrees Dry fruits: 4 to 10 degrees Pharma - chemicals and vaccines: 4 to 10 degrees
- KU9.** product specific hygiene requirements
- KU10.** extent of ethylene production by each product and sensitivity of ethylene exposure to products
- KU11.** checking leaks of ammonia
- KU12.** different types of refrigerant leak detectors, like Halide leak detector, Electronic leak detector and soap and water test
- KU13.** monitoring refrigerants used
- KU14.** how to prioritize activities in maintenance scheduling
- KU15.** necessary resources for each activity
- KU16.** safety standards and precautions to be ensured
- KU17.** applications and effects of different refrigerants
- KU18.** methods for safe usage of refrigerants
- KU19.** relation between refrigeration gas pressure present and the temperature maintained
- KU20.** methods for safe disposal of obsolete equipment or its components
- KU21.** calculation of machine productivity
- KU22.** calculation of expenditures, monitoring variances in the budget for meeting financial standards
- KU23.** how to review maintenance activities

Generic Skills (GS)

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User/individual on the job needs to know how to:

- GS1.** read equipment manual and understand its working
- GS2.** read maintenance budgeting records
- GS3.** read safety instructions
- GS4.** fill maintenance checklists as per completion of activities
- GS5.** do documentation regarding maintenance log
- GS6.** prepare document or report regarding finance, workforce or equipment performance as required by the Management
- GS7.** communicate to workers clearly about the requirements in maintenance activities
- GS8.** communicate any delays or changes in maintenance schedule with workers and other concerned departments like Operations, Packing and Dispatch, Quality Check, Admin and Finance which get impacted due to equipment maintenance activities
- GS9.** communicate with workers to ensure discipline in completing maintenance activities
- GS10.** decide how to resolve emergency situations in equipment functioning
- GS11.** plan routine checks to ensure maintenance schedule is on track
- GS12.** plan equipment service based on its working condition
- GS13.** organize activities based on budgeting constraints
- GS14.** enforce storage and hygiene conditions as per the products handled for the organization or for its customers
- GS15.** re-schedule tasks in case of delays or requirements by other departments in the organization
- GS16.** handle allotment of tasks to workers in case of staff shortage or delays in activities
- GS17.** ability to resolve any conflicts that may arise between workers
- GS18.** interpret equipment diagram and information to identify which components need maintenance
- GS19.** assess working condition of refrigeration equipment
- GS20.** take initiatives to improve work process in equipment maintenance by taking feedback from the workers
- GS21.** identify faults in the refrigerant equipment working
- GS22.** assess criticality of the equipment problem, to prioritize maintenance or repair tasks
- GS23.** keep track of verifiable sources for maintenance schedules and records made,

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensuring maintenance activities are completed as per time, budget and quality</i>	22	44	-	-
PC 1. inspect regularly to ensure maintenance activities are done as per quality requirements	2	4	-	-
PC 2. inspect regularly to ensure maintenance activities are completed timely	2	4	-	-
PC 3. inspect regularly to ensure maintenance activities are done within the costs planned	2	4	-	-
PC 4. ensure that the quality of the products stored under refrigeration is not harmed while equipment components are being checked	2	4	-	-
PC 5. ensure that there is safe discharge of ammonia, so that excess refrigerant is discharged safely (not inside cold room and away from work area)	2	4	-	-
PC 6. ensure to keep drains in the cold area free of debris	2	4	-	-
PC 7. ensure to check operations of door seals regularly	2	4	-	-
PC 8. monitor the sequence of activities as per the schedule	2	4	-	-
PC 9. ensure workers are using protective gear during maintenance or repair	2	4	-	-
PC 10. ensure workers leave the area safe and clean after performing maintenance activities	2	4	-	-
PC 11. ensure that the equipment is calibrated correctly before use	2	4	-	-
<i>Ensuring maintenance records are up-to-date</i>	4	14	-	-
PC 12. assign a resource to maintain records of refrigeration equipment maintenance activities regularly	1	4	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC 13. conduct regular checks on maintenance log to see if it is current	1	4	-	-
PC 14. instruct concerned person to update records if it is not latest	1	3	-	-
PC 15. report to all concerned people in the organization in case the schedule cannot be met	1	3	-	-
<i>Co-ordinating regularly with the workforce</i>	4	12	-	-
PC 16. carry out walk around inspection regularly to monitor activities of subordinates	1	3	-	-
PC 17. communicate with workers as often as needed to ensure maintenance schedule is followed	1	3	-	-
PC 18. allocate parallel tasks to handle different components of refrigeration equipment like evaporator, compressor and condenser, wherever possible	1	3	-	-
PC 19. observe the work efficiency of the workforce and identify training needs wherever necessary	1	3	-	-
NOS Total	30	70	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	LSC/N9102
NOS Name	Monitor maintenance of refrigeration equipment
Sector	Logistics
Sub-Sector	Cold Chain Logistics Solutions
Occupation	Cold Chain Operations
NSQF Level	5
Credits	3
Version	2.0
Last Reviewed Date	NA
Next Review Date	28/02/2026
NSQF Clearance Date	28/02/2023

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LSC/N9103: Oversee service and repair of refrigeration equipment

Description

This OS unit is about overseeing service and repair needs of the refrigeration equipment and ensuring that it is working as required

Scope

The scope covers the following :

- Identify servicing as per refrigeration equipment manufacturer's instructions
- Troubleshoot the refrigeration equipment used
- Record performance of refrigeration equipment Range: compressor, condenser, evaporator, temperature and humidity sensor

Elements and Performance Criteria

Identifying servicing as per equipment manufacturer's instructions

To be competent, the user/individual on the job must be able to:

- PC1.** plan types of maintenance activities based on manufacturer's instructions
- PC2.** plan the frequency of maintenance activities
- PC3.** consider industry level standard practices while planning maintenance
- PC4.** understand procedures while removing or replacing an evaporator or a compressor

Troubleshooting the refrigeration equipment used

To be competent, the user/individual on the job must be able to:

- PC5.** carry out tests or checks regularly to ensure system is working as required
- PC6.** check for freezer insulation degradation by observing compressor duty cycle, condensation or presence of ice
- PC7.** check operation of defrost system and thermostat
- PC8.** plan repairs limited to thermostats, electrical systems, start relays and defrost timers as much as possible
- PC9.** avoid repairs to the cooling system, if they are uneconomical, and consider replacement of components
- PC10.** inspect cold store ceiling panel suspension rods and also their attachments at least once a year
- PC11.** check discharge pressure and suction pressure in control system and make adjustments if necessary
- PC12.** ensure that service or repair activities follow hygiene procedures
- PC13.** trace faults in the components of refrigeration system when it arises
- PC14.** test the working of the equipment, after service or repair
- PC15.** ensure that the equipment is calibrated correctly before using

Recording performance of refrigeration equipment

To be competent, the user/individual on the job must be able to:

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- PC16.** maintain records of service and repair of refrigeration, electrical system, equipment components
- PC17.** analyze the records to arrive at the performance of refrigerated equipment in terms of operating efficiency, downtime and conformity to the requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organizational policies and guidelines
- KU2.** reporting structure
- KU3.** refrigerant usage with its relevant safety and security procedures
- KU4.** procedures to follow during emergency maintenance and repair issues
- KU5.** problems that may arise to different departments in the organization due to maintenance activities and their solutions
- KU6.** operating principles of refrigeration equipment used based on the product type
- KU7.** working of refrigeration equipment components
- KU8.** industry standards or regulations related to servicing of refrigeration equipments
- KU9.** how to rectify faulty equipment. Faults can include compressor failure, improper temperature controls for the products or restricted refrigerant
- KU10.** checking leaks of ammonia
- KU11.** monitoring refrigerants used
- KU12.** relation between refrigeration gas pressure present and the temperature maintained
- KU13.** recording maintenance activities performed so that it can help in analysis later
- KU14.** type of hazards that can be encountered while performing service or repair activities
- KU15.** bonding of electrical system to the components after repair
- KU16.** analysing performance results to recommend and implement changes
- KU17.** managing process for bringing in new equipment or its components

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and understand work related documents
- GS2.** read equipment manual and understand its working
- GS3.** read safety instructions
- GS4.** filling of maintenance checklists as per completion of activities
- GS5.** documentation regarding maintenance log
- GS6.** preparation of reports for management regarding machine performance
- GS7.** documenting details regarding faulty components
- GS8.** communicate to workers clearly about the requirements in maintenance activities
- GS9.** communicate to other departments like Operations, Packing and Dispatch, Quality Check, Admin and Finance which get impacted due to equipment maintenance activities

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- GS10.** mentor all the workers under supervision to increase operational effectiveness
- GS11.** consider relative costs and benefits of repair and replacement of a refrigeration equipment component
- GS12.** resolve emergency situations in equipment functioning
- GS13.** decide between repair or replacement of equipment or its components
- GS14.** plan maintenance activities as per standard requirements and manufacturer's instructions
- GS15.** plan equipment service based on its working condition
- GS16.** enforce storage and hygiene conditions as per the products handled for the organization or for its customers
- GS17.** re-schedule tasks in case of delays or requirements by other departments in the organization
- GS18.** resolve problems in equipment's working by deciding appropriate repair needs
- GS19.** interpret equipment diagram and information to identify which components need maintenance
- GS20.** assess working condition of refrigeration equipment
- GS21.** evaluate reliability of the refrigeration equipment
- GS22.** identify faults in the refrigerant equipment working
- GS23.** assess criticality of the equipment problem, to prioritize maintenance or repair tasks

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identifying servicing as per equipment manufacturer's instructions</i>	8	18	-	-
PC1. plan types of maintenance activities based on manufacturer's instructions	2	5	-	-
PC2. plan the frequency of maintenance activities	2	5	-	-
PC3. consider industry level standard practices while planning maintenance	2	4	-	-
PC4. understand procedures while removing or replacing an evaporator or a compressor	2	4	-	-
<i>Troubleshooting the refrigeration equipment used</i>	20	44	-	-
PC5. carry out tests or checks regularly to ensure system is working as required	2	4	-	-
PC6. check for freezer insulation degradation by observing compressor duty cycle, condensation or presence of ice	2	4	-	-
PC7. check operation of defrost system and thermostat	2	4	-	-
PC8. plan repairs limited to thermostats, electrical systems, start relays and defrost timers as much as possible	2	4	-	-
PC9. avoid repairs to the cooling system, if they are uneconomical, and consider replacement of components	2	4	-	-
PC10. inspect cold store ceiling panel suspension rods and also their attachments at least once a year	2	4	-	-
PC11. check discharge pressure and suction pressure in control system and make adjustments if necessary	2	4	-	-
PC12. ensure that service or repair activities follow hygiene procedures	2	4	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. trace faults in the components of refrigeration system when it arises	2	4	-	-
PC14. test the working of the equipment, after service or repair	1	4	-	-
PC15. ensure that the equipment is calibrated correctly before using	1	4	-	-
<i>Recording performance of refrigeration equipment</i>	2	8	-	-
PC16. maintain records of service and repair of refrigeration, electrical system, equipment components	1	4	-	-
PC17. analyze the records to arrive at the performance of refrigerated equipment in terms of operating efficiency, downtime and conformity to the requirements	1	4	-	-
NOS Total	30	70	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	LSC/N9103
NOS Name	Oversee service and repair of refrigeration equipment
Sector	Logistics
Sub-Sector	Cold Chain Logistics Solutions
Occupation	Maintenance
NSQF Level	5
Credits	3
Version	2.0
Last Reviewed Date	NA
Next Review Date	28/02/2026
NSQC Clearance Date	28/02/2023

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LSC/N9104: Undertake training for plant engineers

Description

This OS unit is about undertaking training activities for plant engineers.

Scope

The scope covers the following :

- Train on handling refrigerant fluids safely
- Train on maintenance of refrigeration equipment (for plant engineers as well as reefer vehicle operators) Range: compressor, condenser, evaporator, temperature and humidity sensor

Elements and Performance Criteria

Training on handling refrigerant fluids safely

To be competent, the user/individual on the job must be able to:

- PC1.** train plant engineers to follow safety procedures while handling refrigerants
- PC2.** provide information on hazardous effects of refrigerants to the environment
- PC3.** train them to ensure refrigerant leaks do not enter work areas or closed room

Training on maintenance of refrigeration equipment (for plant engineers as well as reefer vehicle operators)

To be competent, the user/individual on the job must be able to:

- PC4.** train plant engineers on complying with procedures and practices to maintain refrigeration equipment
- PC5.** teach them procedures while removing or replacing an evaporator, condenser or compressor
- PC6.** provide maintenance history details of the refrigeration equipment, to help in familiarizing with the routine requirements
- PC7.** sensitize plant engineers on energy consumption of refrigeration equipment
- PC8.** provide information on dismantling refrigeration components to trace faults
- PC9.** train plant engineers to inspect the components in need of repair or service
- PC10.** teach plant engineers to reinstate components into the refrigeration equipment
- PC11.** train plant engineers to understand control circuit diagrams of the refrigeration system
- PC12.** train plant engineers on usage of appropriate tools and techniques while handling repairs of evaporators, condensers or compressors
- PC13.** train plant engineers on undertaking numerical calculations or data entry mechanisms required for the activities
- PC14.** train them on emergency responses in case of malfunctioning of refrigeration equipment as a whole or its components like evaporator, condenser or compressor

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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- KU1.** organizational policies and guidelines
- KU2.** reporting structure
- KU3.** organization safety and security procedures of refrigerant usage
- KU4.** procedures to follow during emergency maintenance issues
- KU5.** roles and responsibilities of labourers in the cold storage area
- KU6.** knowledge of transport department procedures
- KU7.** understand procedures for safe transport and disposal of waste materials after maintenance
- KU8.** costs and energy consumption of refrigeration equipment used in the organization
- KU9.** operating principles of refrigeration equipment used based on the product type
- KU10.** working of refrigeration equipment components
- KU11.** mechanics and hydraulics
- KU12.** techniques to dismantle equipment and analyse defects
- KU13.** recording maintenance activities performed so that it can help in analysis later
- KU14.** type of hazards that can be encountered while performing maintenance activities
- KU15.** optimal temperature and humidity conditions required for various products handled by cold chain, for example, Marine products: -18 to -21 degrees Fruits and vegetables: -1 to 15 degrees; 95% to 98% RH; 65% to 75% RH for onion and garlic; 40% to 50% RH for beans, dry fruits and vegetables Dairy: -20 to +4 degrees Dry fruits: 4 to 10 degrees Pharma - chemicals and vaccines: 4 to 10 degrees
- KU16.** product specific hygiene requirements
- KU17.** extent of ethylene production by each product and sensitivity of ethylene exposure to products
- KU18.** relation between refrigeration gas pressure present and the temperature maintained
- KU19.** activities involved in loading and unloading from reefer vehicles
- KU20.** importance of maintaining temperatures for products in reefer vehicles even after docking
- KU21.** monitoring temperature and humidity conditions inside reefer vehicles during driving
- KU22.** different types of refrigerant leak detectors, like Halide leak detector, Electronic leak detector and soap and water test
- KU23.** hygiene requirements to ensure one product does not affect another product in terms of smell, or ethylene emission

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read technical documents regarding refrigeration equipment and update job role knowledge
- GS2.** read equipment manual and understand its working
- GS3.** read safety instructions
- GS4.** filling of maintenance checklists as per completion of activities
- GS5.** documentation regarding maintenance log
- GS6.** documenting details regarding faulty components
- GS7.** communicate to trainees clearly about the requirements in maintenance activities

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- GS8.** communicate clearly the expectations from the plant engineer's job role
- GS9.** communicate technical knowledge regarding equipment functioning
- GS10.** listen and understand all queries or doubts the trainees have during the training
- GS11.** decide training modules combined with practical exposure
- GS12.** resolve emergency situations in equipment functioning
- GS13.** plan training activities
- GS14.** organize practical learning techniques
- GS15.** plan to train plant engineers all maintenance activities as per standard requirements and equipment manufacturer's instructions
- GS16.** help solve all queries or difficulties faced by trainees
- GS17.** re-schedule tasks in case of delays or requirements by other departments in the organization
- GS18.** handle allotment of tasks to workers in case of staff shortage or delays in activities
- GS19.** interpret equipment diagram and information to identify which components need maintenance
- GS20.** assess working condition of refrigeration equipment
- GS21.** plan activities to minimize effects on normal working of the organization
- GS22.** identify faults in the refrigerant equipment working
- GS23.** plan training modules as per the criticality of the maintenance activities and experience of the plant engineer

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Training on handling refrigerant fluids safely</i>	8	15	-	-
PC1. train plant engineers to follow safety procedures while handling refrigerants	3	5	-	-
PC2. provide information on hazardous effects of refrigerants to the environment	3	5	-	-
PC3. train them to ensure refrigerant leaks do not enter work areas or closed room	2	5	-	-
<i>Training on maintenance of refrigeration equipment (for plant engineers as well as reefer vehicle operators)</i>	22	55	-	-
PC4. train plant engineers on complying with procedures and practices to maintain refrigeration equipment	2	5	-	-
PC5. teach them procedures while removing or replacing an evaporator, condenser or compressor	2	5	-	-
PC6. provide maintenance history details of the refrigeration equipment, to help in familiarizing with the routine requirements	2	5	-	-
PC7. sensitize plant engineers on energy consumption of refrigeration equipment	2	5	-	-
PC8. provide information on dismantling refrigeration components to trace faults	2	5	-	-
PC9. train plant engineers to inspect the components in need of repair or service	2	5	-	-
PC10. teach plant engineers to reinstate components into the refrigeration equipment	2	5	-	-
PC11. train plant engineers to understand control circuit diagrams of the refrigeration system	2	5	-	-
PC12. train plant engineers on usage of appropriate tools and techniques while handling repairs of evaporators, condensers or compressors	2	5	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. train plant engineers on undertaking numerical calculations or data entry mechanisms required for the activities	2	5	-	-
PC14. train them on emergency responses in case of malfunctioning of refrigeration equipment as a whole or its components like evaporator, condenser or compressor	2	5	-	-
NOS Total	30	70	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	LSC/N9104
NOS Name	Undertake training for plant engineers
Sector	Logistics
Sub-Sector	Cold Chain Logistics Solutions
Occupation	Cold Chain Operations
NSQF Level	5
Credits	3
Version	2.0
Last Reviewed Date	NA
Next Review Date	28/02/2026
NSQC Clearance Date	28/02/2023

Qualification Pack

LSC/N9901: Maintain food and personnel safety, health and hygiene in cold storage plant

Description

This OS unit is about complying with safety, health and hygiene at the workplace to have a hazard-free environment and avoid downtime

Scope

The scope covers the following :

- Take precautionary measures to avoid work hazards
- Follow standard health, safety and hygiene procedures

Elements and Performance Criteria

Taking precautionary measures to avoid work hazards

To be competent, the user/individual on the job must be able to:

- PC1.** assess the various health, safety and environmental hazards in the cold storage
- PC2.** take necessary steps to eliminate or minimize the hazards
- PC3.** analyze the causes of accidents at the workplace
- PC4.** take preventive measures to avoid risk of cold burns and other injury due to contact with hot surfaces, gas, fire, hot fluids/ liquids, etc.
- PC5.** ensure the employees have access to first aid kit when needed
- PC6.** ensure to use personal protective equipment and safety gear such as gloves, jacket, footwear etc. for loading and unloading material in cold rooms to protect themselves from hypothermia, frostbite etc
- PC7.** ensure to display safety signs at places where necessary for people to be cautious
- PC8.** use rubber mats in the places where floors are constantly wet
- PC9.** ensure electrical precautions such as insulated clothing, adequate equipment insulation, dry work area, switch off the power supply when not required, etc
- PC10.** display emergency exit plan at prominent places and have emergency assembly area earmarked as a grid for easy counting of on duty associates and workers.
- PC11.** unplug the control panel, compressor, condensor etc before performing maintenance
- PC12.** report to the superior on any problems and hazards identified
- PC13.** install fire alarms (electrical/manual) in cold store/deep freeze and keep other safety devices like hammer/mallet in the storage area

Following standard health, safety and hygiene procedures

To be competent, the user/individual on the job must be able to:

- PC14.** maintain appropriate ventilation in the cold rooms to avoid unacceptable accumulation of heat, condensation or odours
- PC15.** check and review the cold storage areas frequently

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- PC16.** stack items in an organized way and use safe lifting techniques to reduce risk of injuries from handling procedures at the storage areas
- PC17.** ensure no sign of pest infestation and install rodent traps, fly glues and insectocutors wherever needed
- PC18.** follow hygiene & sanitation standards of Government bodies like FSSAI, APEDA and /or EIA or importing countries like FAO, EU standards after PC 20
- PC19.** use effective loading and unloading systems
- PC20.** proper stock rotation (First in First out) to be practised
- PC21.** segregate damaged/non-conforming products from other products to designate area for appropriate disposition
- PC22.** fumigate containers depending upon product and contamination or as per customers requirement
- PC23.** avoid smoking, spitting, eating etc near food storage area
- PC24.** ensure reefers are covered, clean, free from pest infestation & other contaminants
- PC25.** dispose cold storage plant waste in the designated areas safely as per companys policies and rules
- PC26.** ensure to be safe while handling machines(generator, compressor, condensor etc), gas (ammonia) and chemicals(ethylene, refrigerants etc)
- PC27.** keep the floors free from oil, water and grease to avoid slippery surface
- PC28.** cut nails regularly and avoid applying nail paint. Avoid wearing bangles, rings, and chains in cold storage
- PC29.** wash hands with soap solution and dry under a dryer as they enter for duty or after using wash room
- PC30.** periodic examination of protective devices, pressure vessels and pipelines, and parts of pipework by a competent person to prevent defect that may give rise to danger
- PC31.** ensure workers suffering from abscess, boils etc should be relieved from food handling
- PC32.** develop personal hygiene habits like brushing teeth, taking shower everybody, wearing clean and tidy clothes after ironing etc

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** companys HR policies on personnel management
- KU2.** companys reporting structure
- KU3.** occupational health and safety standards
- KU4.** cold storageplant inspection checklist
- KU5.** companys sanitary standard operating procedures
- KU6.** procedures to follow during emergency maintenance issues
- KU7.** technical standards for design and construction of cold storages: Bureau of Indian standards(BIS), International standard(ISO) etc
- KU8.** the purpose and usage of protective gears such as gloves , jackets etc. while working
- KU9.** use of first aid at workplace

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- KU10.** cold storage order 1980
- KU11.** food safety and standards act 2006
- KU12.** reporting procedure or heirarchy for signs of damage and potential hazards
- KU13.** methods to minimize accidental risks
- KU14.** safe storage and handling of chemicals like refrigerants, ammonia, ethylene etc
- KU15.** loading and unloading systems
- KU16.** standard operating procedure for safety drills and equipment maintenance
- KU17.** operation of machines: compressor, condensor, evaporator etc
- KU18.** emergency procedures to be followed in case of an mishap such as fire, accidents, etc. and communication of safety instructions to subordinate staff
- KU19.** emergency responses in case of malfunctioning of refrigeration equipment as a whole or its components like evaporator, condenser or compressor
- KU20.** solid, liquid and gaseous waste disposal, treatment norms and equipment
- KU21.** necessary action to be taken for the hazards identified
- KU22.** knowledge of Quality systems like BRC, FSSAI, ISO, FSSC, HACCP etc
- KU23.** safe storage and handling of chemicals like refrigerants, ammonia, ethylene etc
- KU24.** loading and unloading systems
- KU25.** standard operating procedure for safety drills and equipment maintenance
- KU26.** operation of machines: compressor, condensor, evaporator etc
- KU27.** emergency procedures to be followed in case of an mishap such as fire, accidents, etc. and communication of safety instructions to subordinate staff
- KU28.** emergency responses in case of malfunctioning of refrigeration equipment as a whole or its components like evaporator, condenser or compressor
- KU29.** solid, liquid and gaseous waste disposal, treatment norms and equipment
- KU30.** necessary action to be taken for the hazards identified
- KU31.** knowledge of Quality systems like BRC, FSSAI, ISO, FSSC, HACCP etc
- KU32.** Maintain food and personnel safety, health and hygiene in cold storage plant

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and interpret the relevant organisation policies, procedures and diagrams that identify health, safety and safe environmental practices.
- GS2.** read job sheets, company policy documents and information displayed at the workplace for health, safety and environment.
- GS3.** read notes/comments from the senior
- GS4.** fill up documentation related to health, safety and environmental standards, if required
- GS5.** verbally report health, safety and environmental hazards and poor organisation practice.
- GS6.** communicate to the supervisor about the work health, safety and environmental issues
- GS7.** receive instructions from supervisor on minimizing the risks
- GS8.** communicate with co-workers about the precautions to be taken for hazards free work

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- GS9.** take preventive measures for the identified hazards
- GS10.** select appropriate hand tools and personal protection equipment
- GS11.** identify first aid needs in case of an injury
- GS12.** formalize and display evacuation plan at strategic locations
- GS13.** ensure targeted product delivery by practicing stipulated standards of occupational health safety and environmental measures
- GS14.** take care of personal and equipment protection
- GS15.** identify the hazards and suggest possible solutions
- GS16.** use safety equipment such as fire extinguisher during fire accidents
- GS17.** store tools in a safe way
- GS18.** analyse the seriousness of the hazards
- GS19.** evolve smooth workflow by avoiding hazards at workplace
- GS20.** evaluate and apply the possible solutions for the hazards, as necessary
- GS21.** take care of personal and equipment protection
- GS22.** identify the hazards and suggest possible solutions
- GS23.** use safety equipment such as fire extinguisher during fire accidents
- GS24.** store tools in a safe way
- GS25.** analyse the seriousness of the hazards
- GS26.** evolve smooth workflow by avoiding hazards at workplace
- GS27.** evaluate and apply the possible solutions for the hazards, as necessary

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Taking precautionary measures to avoid work hazards</i>	11	30	-	-
PC1. assess the various health, safety and environmental hazards in the cold storage	1	3	-	-
PC2. take necessary steps to eliminate or minimize the hazards	1	3	-	-
PC3. analyze the causes of accidents at the workplace	1	3	-	-
PC4. take preventive measures to avoid risk of cold burns and other injury due to contact with hot surfaces, gas, fire, hot fluids/ liquids, etc.	1	2	-	-
PC5. ensure the employees have access to first aid kit when needed	1	2	-	-
PC6. ensure to use personal protective equipment and safety gear such as gloves, jacket, footwear etc. for loading and unloading material in cold rooms to protect themselves from hypothermia, frostbite etc	1	2	-	-
PC7. ensure to display safety signs at places where necessary for people to be cautious	1	2	-	-
PC8. use rubber mats in the places where floors are constantly wet	-	2	-	-
PC9. ensure electrical precautions such as insulated clothing, adequate equipment insulation, dry work area, switch off the power supply when not required, etc	1	2	-	-
PC10. display emergency exit plan at prominent places and have emergency assembly area earmarked as a grid for easy counting of on duty associates and workers.	1	2	-	-
PC11. unplug the control panel, compressor, condensor etc before performing maintenance	-	2	-	-
PC12. report to the superior on any problems and hazards identified	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. install fire alarms (electrical/manual) in cold store/deep freeze and keep other safety devices like hammer/mallet in the storage area	1	3	-	-
<i>Following standard health, safety and hygiene procedures</i>	19	40	-	-
PC14. maintain appropriate ventilation in the cold rooms to avoid unacceptable accumulation of heat, condensation or odours	1	2	-	-
PC15. check and review the cold storage areas frequently	1	2	-	-
PC16. stack items in an organized way and use safe lifting techniques to reduce risk of injuries from handling procedures at the storage areas	1	2	-	-
PC17. ensure no sign of pest infestation and install rodent traps, fly glues and insectocutors wherever needed	1	2	-	-
PC18. follow hygiene & sanitation standards of Government bodies like FSSAI, APEDA and /or EIA or importing countries like FAO, EU standards after PC 20	1	2	-	-
PC19. use effective loading and unloading systems	1	2	-	-
PC20. proper stock rotation (First in First out) to be practised	1	2	-	-
PC21. segregate damaged/non-conforming products from other products to designate area for appropriate disposition	1	2	-	-
PC22. fumigate containers depending upon product and contamination or as per customers requirement	1	2	-	-
PC23. avoid smoking, spitting, eating etc near food storage area	1	2	-	-
PC24. ensure reefers are covered, clean, free from pest infestation & other contaminants	1	2	-	-
PC25. dispose cold storage plant waste in the designated areas safely as per companys policies and rules	1	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. ensure to be safe while handling machines(generator, compressor, condensor etc), gas (ammonia) and chemicals(ethylene, refrigerants etc)	1	2	-	-
PC27. keep the floors free from oil, water and grease to avoid slippery surface	1	2	-	-
PC28. cut nails regularly and avoid applying nail paint. Avoid wearing bangles, rings, and chains in cold storage	1	2	-	-
PC29. wash hands with soap solution and dry under a dryer as they enter for duty or after using wash room	1	2	-	-
PC30. periodic examination of protective devices, pressure vessels and pipelines, and parts of pipework by a competent person to prevent defect that may give rise to danger	1	2	-	-
PC31. ensure workers suffering from abscess, boils etc should be relieved from food handling	1	3	-	-
PC32. develop personal hygiene habits like brushing teeth, taking shower everybody, wearing clean and tidy clothes after ironing etc	1	2	-	-
NOS Total	30	70	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	LSC/N9901
NOS Name	Maintain food and personnel safety, health and hygiene in cold storage plant
Sector	Logistics
Sub-Sector	Cold Chain Logistics Solutions
Occupation	Cold Chain Operations
NSQF Level	5
Credits	2
Version	2.0
Last Reviewed Date	NA
Next Review Date	28/02/2026
NSQC Clearance Date	28/02/2023

Qualification Pack

LSC/N9902: Communicate effectively with colleagues and clients

Description

This OS unit is about coordinating and communicating effectively with seniors, colleagues and clients to achieve a smooth workflow

Scope

The scope covers the following :

- Interact with seniors
- Communicate with colleagues
- Communicate effectively with clients

Elements and Performance Criteria

Interacting with seniors

To be competent, the user/individual on the job must be able to:

- PC1.** understand the work output requirements, targets, performance indicators and incentives
- PC2.** deliver quality work on time and report any anticipated reasons for delays
- PC3.** escalate unresolved problems or complaints to the relevant superior
- PC4.** communicate project progress proactively to the superior
- PC5.** receive feedback on work standards
- PC6.** document the completed work schedule and handover to the superior

Communicating with colleagues

To be competent, the user/individual on the job must be able to:

- PC7.** exhibit trust, support and respect to all the colleagues in the workplace
- PC8.** aim to achieve hassle free cold chain operation
- PC9.** help and assist colleagues with information and knowledge
- PC10.** seek assistance from the colleagues when required
- PC11.** identify the potential and existing conflicts with the colleagues and resolve
- PC12.** pass on essential information to other colleagues on timely basis
- PC13.** maintain the etiquette, use polite language, demonstrate responsible and disciplined behaviors to the colleagues
- PC14.** interact with colleagues from different departments: ripening chamber, cold storage, transport, packhouse etc to effectively carry out the work among the team and understand the nature of their work
- PC15.** put team over individual goals and multi task or share work where necessary supporting the colleagues
- PC16.** highlight any errors of colleagues, help to rectify and ensure quality output
- PC17.** work with cooperation, coordination, communication and collaboration, with shared goals and supporting each others performance

Communicating effectively with clients

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To be competent, the user/individual on the job must be able to:

- PC18.** ask relevant questions to the client and identify their needs
- PC19.** possess strong knowledge on market and cold chain operation
- PC20.** brief the client clearly on potential costs and challenges involved in the cold chain industry
- PC21.** communicate with the client in a polite, professional and friendly manner
- PC22.** build effective but impersonal relationship with the client
- PC23.** ensure the appropriate language and tone are used with clients
- PC24.** listen actively and have a two way communication
- PC25.** be sensitive to the gender, cultural and social differences such as modes of greeting, formality, etc.
- PC26.** understand the client expectations correctly and provide the appropriate products and services
- PC27.** understand the client dissatisfaction and address or escalate their complaints effectively
- PC28.** maintain a positive, sensible and cooperative manner all time
- PC29.** ensure to maintain a proper body language, dress code, gestures and etiquettes towards the client
- PC30.** avoid interrupting the client while they talk
- PC31.** ensure to avoid negative questions and statements to the client
- PC32.** inform the client on any issues or problems before hand and also on the developments involving them
- PC33.** ensure to respond back to the client immediately for their voice messages, e-mails, apps, etc.
- PC34.** develop good rapport with the client and promote other products and services
- PC35.** seek feedback from the client on their understanding to what was discussed
- PC36.** explain the terms and conditions clearly

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** companys HR policies on personnel management
- KU2.** companys reporting structure
- KU3.** occupational health and safety standards
- KU4.** cold storageplant inspection checklist
- KU5.** companys sanitary standard operating procedures
- KU6.** procedures to follow during emergency maintenance issues
- KU7.** technical standards for design and construction of cold storages: Bureau of Indian standards(BIS), International standard(ISO) etc
- KU8.** methods for effective communication with various categories of people and the different departments in the organization
- KU9.** significance of team coordination and productivity targets of the organisation
- KU10.** how to record the job activity as required on various types of documents

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- KU11.** how to use computer or smartphone to communicate effectively and productively
- KU12.** significance of helping colleagues with specific issues and problems
- KU13.** importance of meeting quality and time standards as a team
- KU14.** how to practice effective listening and talking
- KU15.** effective use of voice tone and pitch for communication
- KU16.** how to demonstrate ethics and convey discipline to the clients
- KU17.** how to build effective working relationship with mutual trust and respect within the team
- KU18.** importance of dealing with grievances effectively and in time
- KU19.** safe storage and handling of chemicals like refrigerants, ammonia, ethylene etc
- KU20.** loading and unloading systems
- KU21.** standard operating procedure for safety drills and equipment maintenance
- KU22.** operation of machines: compressor, condensor, evaporator etc
- KU23.** emergency procedures to be followed in case of an mishap such as fire, accidents, etc. and communication of safety instructions to subordinate staff
- KU24.** emergency responses in case of malfunctioning of refrigeration equipment as a whole or its components like evaporator, condenser or compressor
- KU25.** solid, liquid and gaseous waste disposal, treatment norms and equipment
- KU26.** necessary action to be taken for the hazards identified
- KU27.** knowledge of Quality systems like BRC, FSSAI, ISO, FSSC, HACCP etc
- KU28.** Maintain food and personnel safety, health and hygiene in cold storage plant

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and interpret the relevant organisation policies, procedures and diagrams that identify health, safety and safe environmental practices.
- GS2.** read notes/comments from the senior
- GS3.** fill up documentation pertaining to job requirement
- GS4.** interact with team members to work efficiently
- GS5.** communicate effectively with senior to achieve smooth workflow
- GS6.** communicate effectively with the clients to build a good rapport with them
- GS7.** use language that the client or colleague understands
- GS8.** use the communication systems of the company, e.g., telephone, fax, public announcement systems
- GS9.** E-mail and use Internet for communicating
- GS10.** use of audio-visual aids to communicate complex issues
- GS11.** spot and communicate potential areas of disruptions to work process and report the same
- GS12.** report to supervisor and deal with a colleague individually, depending on the type of concern
- GS13.** plan communication strategy in order to avoid conflicts and work disruption
- GS14.** practice patient listening, careful talking and paraphrasing in order to avoid misunderstanding

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- GS15.** coordinate with different departments and multi-task as necessary
- GS16.** contribute to quality of team work and achieve smooth workflow
- GS17.** share work load as required
- GS18.** delegate work in consultation with senior or as necessary instead of allowing work to pile up
- GS19.** resolve recurring inter-personal conflicts by clear and two-way dialogue
- GS20.** improve work processes by interacting with others and adopting best practices
- GS21.** take care of personal and equipment protection
- GS22.** identify the hazards and suggest possible solutions
- GS23.** use safety equipment such as fire extinguisher during fire accidents
- GS24.** store tools in a safe way
- GS25.** analyse the seriousness of the hazards
- GS26.** evolve smooth workflow by avoiding hazards at workplace
- GS27.** evaluate and apply the possible solutions for the hazards, as necessary

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Interacting with seniors</i>	6	12	-	-
PC1. understand the work output requirements, targets, performance indicators and incentives	1	2	-	-
PC2. deliver quality work on time and report any anticipated reasons for delays	1	2	-	-
PC3. escalate unresolved problems or complaints to the relevant superior	1	2	-	-
PC4. communicate project progress proactively to the superior	1	2	-	-
PC5. receive feedback on work standards	1	2	-	-
PC6. document the completed work schedule and handover to the superior	1	2	-	-
<i>Communicating with colleagues</i>	11	22	-	-
PC7. exhibit trust, support and respect to all the colleagues in the workplace	1	2	-	-
PC8. aim to achieve hassle free cold chain operation	1	2	-	-
PC9. help and assist colleagues with information and knowledge	1	2	-	-
PC10. seek assistance from the colleagues when required	1	2	-	-
PC11. identify the potential and existing conflicts with the colleagues and resolve	1	2	-	-
PC12. pass on essential information to other colleagues on timely basis	1	2	-	-
PC13. maintain the etiquette, use polite language, demonstrate responsible and disciplined behaviors to the colleagues	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. interact with colleagues from different departments: ripening chamber, cold storage, transport, packhouse etc to effectively carry out the work among the team and understand the nature of their work	1	2	-	-
PC15. put team over individual goals and multi task or share work where necessary supporting the colleagues	1	2	-	-
PC16. highlight any errors of colleagues, help to rectify and ensure quality output	1	2	-	-
PC17. work with cooperation, coordination, communication and collaboration, with shared goals and supporting each others performance	1	2	-	-
<i>Communicating effectively with clients</i>	13	36	-	-
PC18. ask relevant questions to the client and identify their needs	1	2	-	-
PC19. possess strong knowledge on market and cold chain operation	1	2	-	-
PC20. brief the client clearly on potential costs and challenges involved in the cold chain industry	1	2	-	-
PC21. communicate with the client in a polite, professional and friendly manner	1	2	-	-
PC22. build effective but impersonal relationship with the client	1	2	-	-
PC23. ensure the appropriate language and tone are used with clients	1	2	-	-
PC24. listen actively and have a two way communication	1	2	-	-
PC25. be sensitive to the gender, cultural and social differences such as modes of greeting, formality, etc.	1	2	-	-
PC26. understand the client expectations correctly and provide the appropriate products and services	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC27. understand the client dissatisfaction and address or escalate their complaints effectively	1	2	-	-
PC28. maintain a positive, sensible and cooperative manner all time	1	2	-	-
PC29. ensure to maintain a proper body language, dress code, gestures and etiquettes towards the client	1	2	-	-
PC30. avoid interrupting the client while they talk	-	2	-	-
PC31. ensure to avoid negative questions and statements to the client	-	2	-	-
PC32. inform the client on any issues or problems before hand and also on the developments involving them	-	2	-	-
PC33. ensure to respond back to the client immediately for their voice messages, e-mails, apps, etc.	-	2	-	-
PC34. develop good rapport with the client and promote other products and services	-	2	-	-
PC35. seek feedback from the client on their understanding to what was discussed	-	1	-	-
PC36. explain the terms and conditions clearly	1	1	-	-
NOS Total	30	70	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	LSC/N9902
NOS Name	Communicate effectively with colleagues and clients
Sector	Logistics
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	2
Version	2.0
Last Reviewed Date	NA
Next Review Date	03/05/2026
NSQC Clearance Date	03/05/2023

Qualification Pack

DGT/VSQ/N0102: Employability Skills (60 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

- PC1.** identify employability skills required for jobs in various industries
- PC2.** identify and explore learning and employability portals

Constitutional values - Citizenship

To be competent, the user/individual on the job must be able to:

- PC3.** recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.
- PC4.** follow environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

- PC5.** recognize the significance of 21st Century Skills for employment
- PC6.** practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

Basic English Skills

To be competent, the user/individual on the job must be able to:

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- PC7.** use basic English for everyday conversation in different contexts, in person and over the telephone
- PC8.** read and understand routine information, notes, instructions, mails, letters etc. written in English
- PC9.** write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

To be competent, the user/individual on the job must be able to:

- PC10.** understand the difference between job and career
- PC11.** prepare a career development plan with short- and long-term goals, based on aptitude

Communication Skills

To be competent, the user/individual on the job must be able to:

- PC12.** follow verbal and non-verbal communication etiquette and active listening techniques in various settings
- PC13.** work collaboratively with others in a team

Diversity & Inclusion

To be competent, the user/individual on the job must be able to:

- PC14.** communicate and behave appropriately with all genders and PwD
- PC15.** escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

- PC16.** select financial institutions, products and services as per requirement
- PC17.** carry out offline and online financial transactions, safely and securely
- PC18.** identify common components of salary and compute income, expenses, taxes, investments etc
- PC19.** identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

- PC20.** operate digital devices and carry out basic internet operations securely and safely
- PC21.** use e- mail and social media platforms and virtual collaboration tools to work effectively
- PC22.** use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

To be competent, the user/individual on the job must be able to:

- PC23.** identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research
- PC24.** develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- PC25.** identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

To be competent, the user/individual on the job must be able to:

- PC26.** identify different types of customers
- PC27.** identify and respond to customer requests and needs in a professional manner.

Qualification Pack

PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

PC29. create a professional Curriculum vitae (Résumé)

PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC31. apply to identified job openings using offline /online methods as per requirement

PC32. answer questions politely, with clarity and confidence, during recruitment and selection

PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU6. importance of career development and setting long- and short-term goals

KU7. about effective communication

KU8. POSH Act

KU9. Gender sensitivity and inclusivity

KU10. different types of financial institutes, products, and services

KU11. how to compute income and expenditure

KU12. importance of maintaining safety and security in offline and online financial transactions

KU13. different legal rights and laws

KU14. different types of digital devices and the procedure to operate them safely and securely

KU15. how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

KU16. how to identify business opportunities

KU17. types and needs of customers

KU18. how to apply for a job and prepare for an interview

KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read and write different types of documents/instructions/correspondence

GS2. communicate effectively using appropriate language in formal and informal settings



Qualification Pack

- GS3.** behave politely and appropriately with all
- GS4.** how to work in a virtual mode
- GS5.** perform calculations efficiently
- GS6.** solve problems effectively
- GS7.** pay attention to details
- GS8.** manage time efficiently
- GS9.** maintain hygiene and sanitization to avoid infection

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	1	1	-	-
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
<i>Constitutional values - Citizenship</i>	1	1	-	-
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	2	4	-	-
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
<i>Basic English Skills</i>	2	3	-	-
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development & Goal Setting</i>	1	2	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
<i>Communication Skills</i>	2	2	-	-
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
<i>Diversity & Inclusion</i>	1	2	-	-
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	2	3	-	-
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	3	4	-	-
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Entrepreneurship</i>	2	3	-	-
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	1	2	-	-
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship & Jobs</i>	2	3	-	-
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	20	30	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	NA
Next Review Date	28/02/2026
NSQC Clearance Date	28/02/2023

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

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 center (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 criterion
5. To pass the Qualification Pack, every trainee should score a minimum of 70% for NSQF level 4 & above job roles and 50% for NSQF level 1 to 3 job roles
6. In case of unsuccessful completion, the trainee may seek re-assessment on the Qualification Pack

Qualification Pack

Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
LSC/N9101.Plan the maintenance of refrigeration equipment	30	70	-	-	100	15
LSC/N9102.Monitor maintenance of refrigeration equipment	30	70	-	-	100	15
LSC/N9103.Oversee service and repair of refrigeration equipment	30	70	-	-	100	15
LSC/N9104.Undertake training for plant engineers	30	70	-	-	100	15
LSC/N9901.Maintain food and personnel safety, health and hygiene in cold storage plant	30	70	-	-	100	15
LSC/N9902.Communicate effectively with colleagues and clients	30	70	-	-	100	15
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	0	0	50	10
Total	200	450	0	0	650	100



Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Qualification Pack

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

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Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.