

Qualification Pack



Multi Skill Technician - Consumer Durables

Electives: Elective 1 / Elective 2

QP Code: ELE/Q3118

Version: 1.0

NSQF Level: 4

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ELE/Q3118: Multi Skill Technician - Consumer Durables

Brief Job Description

The incumbent at work is responsible for installation, diagnose, troubleshoot and repair all consumer durables like refrigerator, TV, washing machine, water purifier, microwave etc. and communicate the Service Manager/Lead Mechanic regarding repair priorities and status

Personal Attributes

The individual must have strength to lift heavy parts and modules, ability to work in high-decibel noise environment and in a standing position for long hours.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

Electives(mandatory to select at least one):

Elective 1: Elective 1

Installation and service (Refrigerator,Washing machine,Dishwasher,Air conditioner & Gas Charging)

1. [ELE/N3161: Gas Charging in Air Conditioner and Refrigerator](#)
2. [ELE/N3162: Installation & Repair of Air Conditioner](#)
3. [ELE/N3163: Installation and Repair of Dish Washer](#)
4. [ELE/N3169: Installation and repair of Refrigerator \(DIOS\)](#)
5. [ELE/N3170: Installation and repair of washing machine](#)

Elective 2: Elective 2

Installations and Repair (TV,Microwave,Water purifier,Basics Refrigerator& washing machine, OLED & Monitor)

1. [ELE/N3164: Installation and repair of OLED/Monitor TV](#)
2. [ELE/N3165: Installation and Repair of Basic Refrigerator and Washing Machine](#)
3. [ELE/N3166: Installation and Repair of Water Purifier](#)



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4. [ELE/N3167: Installation and repair of Microwave](#)

5. [ELE/N3168: Installation and Repair of TV](#)

Qualification Pack (QP) Parameters

Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
Country	India
NSQF Level	4
Credits	42
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7421.0701
Minimum Educational Qualification & Experience	8th Class (NTC 2 Years after 8th) with 2 Years of experience NAC/relevant OR 10th Class (pass) with 2 Years of experience NTC/NAC/Relevant Experience OR Certificate-NSQF (Level 3 - Electrical Technician) with 2 Years of experience Relevant Experience OR 12th Class (pass)
Minimum Level of Education for Training in School	8th Class
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	17/11/2025
NSQF Approval Date	17/11/2022
Version	1.0
Reference code on NQR	2022/EHW/ESSCI/06454



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NQR Version	1.0
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Remarks:

NA



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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.

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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



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- 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

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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	-	-

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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	-	-	-	-

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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	-	-



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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	24/02/2025
NSQC Clearance Date	24/02/2022

Qualification Pack

ELE/N3161: Gas Charging in Air Conditioner and Refrigerator

Description

This unit is about performing gas charging in air conditioner and refrigerator.

Scope

The scope covers the following :

- Prepare for gas charging work
- Gas charging in AC and refrigerator
- Carryout post gas filling activities

Elements and Performance Criteria

Prepare for gas charging work

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

- PC1.** obtain the necessary information about the equipment i.e. refrigerator or AC and their model and type and details of the customer for gas charging work
- PC2.** collect the necessary tools and equipment required during work
- PC3.** select and arrange the appropriate type of gas cylinder and connecting hoses required for filling the equipment on the basis of type and model of equipment

Gas charging in air conditioner and refrigerator

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

- PC4.** connect a pressure gauge to the gas inlet of AC and refrigerator and check the pressures against the ambient temperature, if gas pressure is below the manufacturer recommended gas pressure, then there is need to fill the gas
- PC5.** connect the gas cylinder hose to the gas inlet of AC and refrigerator and start filling the gas
- PC6.** check the pressure gauge at regular intervals and once the gas pressure reached to the recommended pressure, then stop the gas filling
- PC7.** connect the equipment pipes with the gas inlet and tighten it properly
- PC8.** ensure that there is no leakage of gas at the gas inlet
- PC9.** start and check the cooling of equipment

Carryout post gas filling activities

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

- PC10.** clear up the waste and dispose as per company's norms
- PC11.** collect the payment if the unit is not in warranty and complete the documentation
- PC12.** fill the service report and take acknowledgment from the customer
- PC13.** document the work completed for future records

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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- KU1.** relevant legislation, standards, policies, and procedures followed in the organization
- KU2.** health and safety requirements applicable in the workplace
- KU3.** various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.
- KU4.** methods of accident prevention
- KU5.** importance of using protective clothing/equipment while working
- KU6.** general principles for identifying and controlling health and safety risks
- KU7.** main hazards and preventive as well as control measures while working with different types of equipment
- KU8.** importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control
- KU9.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment
- KU10.** safe working practices while working at various hazardous sites
- KU11.** health effects associated with exposure to noise and vibration and the appropriate control measures
- KU12.** procedure of filling gas in refrigerator and AC
- KU13.** refrigeration cycle and functioning of the appliance and its various modules
- KU14.** method of refrigeration, its use and functioning of refrigerator sealed system
- KU15.** types of refrigerants such as R12, R22, R134a, R290, R600a, R410, R32 use of different brazing sticks, types of brazing torches and their application

Generic Skills (GS)

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

- GS1.** note the information related to work and processes
- GS2.** write reports and observations related to work in English/regional language
- GS3.** read and interpret and process flowcharts for all operations
- GS4.** read manuals and operation documents to understand the Equipment used into operation
- GS5.** discuss task lists, schedules and activities with the seniors and team members
- GS6.** follow organization rule-based decision-making process
- GS7.** take decisions with systematic course of actions and/or response
- GS8.** plan and organize tasks to meet deadlines
- GS9.** find ways of modifying difficult operating stages to make it operation friendly
- GS10.** apply domain information to set and define operation parameters that ensures economy and quality of the product
- GS11.** analyse the complexity of work to determine if it can be successfully carried out or needs to be referred to a superior/specialist
- GS12.** recognise a workplace problem and take suitable action to resolve it

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for gas charging work</i>	10	12	-	-
PC1. obtain the necessary information about the equipment i.e. refrigerator or AC and their model and type and details of the customer for gas charging work	2	4	-	-
PC2. collect the necessary tools and equipment required during work	5	3	-	-
PC3. select and arrange the appropriate type of gas cylinder and connecting hoses required for filling the equipment on the basis of type and model of equipment	3	5	-	-
<i>Gas charging in air conditioner and refrigerator</i>	22	36	-	-
PC4. connect a pressure gauge to the gas inlet of AC and refrigerator and check the pressures against the ambient temperature, if gas pressure is below the manufacturer recommended gas pressure, then there is need to fill the gas	3	5	-	-
PC5. connect the gas cylinder hose to the gas inlet of AC and refrigerator and start filling the gas	5	8	-	-
PC6. check the pressure gauge at regular intervals and once the gas pressure reached to the recommended pressure, then stop the gas filling	5	8	-	-
PC7. connect the equipment pipes with the gas inlet and tighten it properly	3	5	-	-
PC8. ensure that there is no leakage of gas at the gas inlet	3	5	-	-
PC9. start and check the cooling of equipment	3	5	-	-
<i>Carryout post gas filling activities</i>	8	12	-	-
PC10. clear up the waste and dispose as per company's norms	1	2	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. collect the payment if the unit is not in warranty and complete the documentation	3	4	-	-
PC12. fill the service report and take acknowledgment from the customer	3	4	-	-
PC13. document the work completed for future records	1	2	-	-
NOS Total	40	60	-	-



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National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3161
NOS Name	Gas Charging in Air Conditioner and Refrigerator
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
NSQF Level	4
Credits	3
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

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ELE/N3162: Installation & Repair of Air Conditioner

Description

This unit is about performing installation and onsite repairing of the air conditioner as per the specifications of the manufacturer and consultation with the customer addressing his/her needs.

Scope

The scope covers the following :

- Prepare for installation and repairing of air conditioner
- Install window air conditioner
- Install split air conditioner
- Carryout troubleshooting and repairing of the air conditioner
- Carryout post installation and repairing activities

Elements and Performance Criteria

Prepare for installation and repairing of air conditioner

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

- PC1.** obtain the information and details of the customer for installation and repairing work
- PC2.** collect the necessary tools and equipment required for installation and repairing work
- PC3.** check the functionality of tools and equipment before use
- PC4.** use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards
- PC5.** follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments
- PC6.** remove the air conditioner packaging and check the product specifications with the billing invoice to identify type (window or split), make and capacity of air conditioner
- PC7.** interact with the customer to understand where the air conditioner is to be installed, i.e., window, split etc.
- PC8.** check that the location meets structural requirements such as distance from power supply, distance from windows/doors being opened frequently

Install window air conditioner

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

- PC9.** measure the space for installation to assure a good fit and air conditioner must be installed firmly into place to prevent vibration and noise
- PC10.** install the circuit breaker switch (if not available) and fix all the parts and components of window AC properly as per the instructions in manufacturer manual and SOP
- PC11.** install the drain pan over the corner of the cabinet and connect the drain hose to the outlet located on the bottom of the drain pan
- PC12.** install the AC unit in the window as per the instructions in manufacturer manual and SOP

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- PC13.** ensure that the bottom of the cabinet is well supported, the top has minimum clearance and the air inlet louvers have clearance
- PC14.** connect the power cord with the circuit breaker switch, start the AC and check the functioning of AC by using remote
- PC15.** demonstrate the features and functioning of AC to the customer as per the instructions in manufacturer manual
- PC16.** guide the customer on proper placement, day to day care activities and precautions while using the air conditioner

Install split air conditioner

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

- PC17.** educate the customer of any pre installations/masonry/electrical work to be carried out and requirement of concealed drainage and electric conduits
- PC18.** make measurements at the location identified and drill holes ensuring no internal wiring damage takes place
- PC19.** mount the indoor unit and ensure that the screws are fastened securely
- PC20.** place the outdoor unit at a suitable location and attach it firmly to wall/floor
- PC21.** connect the indoor and the outdoor units using the field copper pipe of appropriate size and interconnecting cables
- PC22.** align the air conditioner according to the instruction manual
- PC23.** connect the power cord with the circuit breaker switch, start the AC and check the functioning of AC by using remote
- PC24.** check the air conditioning gas and fill additional gas (if required) as recommended in the manufacturer's manual
- PC25.** demonstrate to the customer about the features and utility of air conditioner
- PC26.** guide the customer on proper placement, day to day care activities and precautions while using the air conditioner

Carryout troubleshooting and repairing of the air conditioner

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

- PC27.** enquire about the problems/unusual conditions noticed on the equipment from the customer
- PC28.** check the air conditioner for any servicing requirements and clean the air conditioner filter, indoor and outdoor unit, drain hose etc. as per the SOP
- PC29.** carry out troubleshooting activities to identify the faults such as power supply failure, less cooling, gas leakage, compressor failure etc. and faulty component in the AC
- PC30.** refill the refrigerant gas if required by following instructions in manufacturer manual
- PC31.** unplug the unit and carry out basic tests such as power supply inspection, volt ampere test and earth test power supply, compressor, condenser etc.
- PC32.** separate and inspect every module of the unit if the fault is not identified through basic tests
- PC33.** inspect major components and identify that the faulty component to be repaired or replaced
- PC34.** dismantle the component for carrying out repair or replacement after disconnecting it from power supply
- PC35.** remove and replace the faulty module with a functional one, either on a second visit or as pre-identified and collected from the service centre, if the problem is at the PCB level or components that cannot be replaced at site

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PC36. reassemble the module and air conditioner in complete and connect to power supply for checking the working

PC37. check all the modules working as per specifications

PC38. if the problem cannot be serviced onsite, then sent the unit to service center

Carryout post installation and repairing activities

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

PC39. clear up the packaging material waste and dispose as per company's norms

PC40. collect the payment if the unit is not in warranty and complete the documentation

PC41. fill the installation or service report and take acknowledgment from the customer

PC42. document the work completed for future records

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant legislation, standards, policies, and procedures followed in the organization

KU2. health and safety requirements applicable in the workplace

KU3. various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.

KU4. methods of accident prevention

KU5. importance of using protective clothing/equipment while working

KU6. general principles for identifying and controlling health and safety risks

KU7. main hazards and preventive as well as control measures while working with different types of equipment

KU8. importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control

KU9. main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment

KU10. safe working practices while working at various hazardous sites

KU11. health effects associated with exposure to noise and vibration and the appropriate control measures

KU12. installation site requirements (structural requirements, ventilation, etc.)

KU13. different types of air conditioners, e.g., window, split air, cassette conditioners and differences in their operation

KU14. different features and functionalities of various models

KU15. manual-based procedure of installing the air conditioner

KU16. method of air conditioning, its use and functioning of sealed system

KU17. refrigeration cycle and functioning of the appliance and its various modules

KU18. method of refrigeration, its use and functioning of refrigerator sealed system

KU19. functioning of various electromechanical parts of the AC

Generic Skills (GS)



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

- GS1.** note the information related to work and processes
- GS2.** write reports and observations related to work in English/regional language
- GS3.** read and interpret and process flowcharts for all operations
- GS4.** read manuals and operation documents to understand the Equipment used into operation
- GS5.** discuss task lists, schedules and activities with the seniors and team members
- GS6.** follow organization rule-based decision-making process
- GS7.** take decisions with systematic course of actions and/or response
- GS8.** plan and organize tasks to meet deadlines
- GS9.** find ways of modifying difficult operating stages to make it operation friendly
- GS10.** apply domain information to set and define operation parameters that ensures economy and quality of the product
- GS11.** analyse the complexity of work to determine if it can be successfully carried out or needs to be referred to a superior/specialist
- GS12.** recognise a workplace problem and take suitable action to resolve it

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation and repairing of air conditioner</i>	8	8	-	-
PC1. obtain the information and details of the customer for installation and repairing work	1	-	-	-
PC2. collect the necessary tools and equipment required for installation and repairing work	2	1	-	-
PC3. check the functionality of tools and equipment before use	1	2	-	-
PC4. use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards	1	1	-	-
PC5. follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments	-	1	-	-
PC6. remove the air conditioner packaging and check the product specifications with the billing invoice to identify type (window or split), make and capacity of air conditioner	1	1	-	-
PC7. interact with the customer to understand where the air conditioner is to be installed, i.e., window, split etc.	1	-	-	-
PC8. check that the location meets structural requirements such as distance from power supply, distance from windows/doors being opened frequently	1	2	-	-
<i>Install window air conditioner</i>	8	13	-	-
PC9. measure the space for installation to assure a good fit and air conditioner must be installed firmly into place to prevent vibration and noise	1	2	-	-
PC10. install the circuit breaker switch (if not available) and fix all the parts and components of window AC properly as per the instructions in manufacturer manual and SOP	1	2	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. install the drain pan over the corner of the cabinet and connect the drain hose to the outlet located on the bottom of the drain pan	1	2	-	-
PC12. install the AC unit in the window as per the instructions in manufacturer manual and SOP	1	2	-	-
PC13. ensure that the bottom of the cabinet is well supported, the top has minimum clearance and the air inlet louvers have clearance	1	-	-	-
PC14. connect the power cord with the circuit breaker switch, start the AC and check the functioning of AC by using remote	1	2	-	-
PC15. demonstrate the features and functioning of AC to the customer as per the instructions in manufacturer manual	1	2	-	-
PC16. guide the customer on proper placement, day to day care activities and precautions while using the air conditioner	1	1	-	-
<i>Install split air conditioner</i>	9	17	-	-
PC17. educate the customer of any pre installations/masonry/electrical work to be carried out and requirement of concealed drainage and electric conduits	1	1	-	-
PC18. make measurements at the location identified and drill holes ensuring no internal wiring damage takes place	1	2	-	-
PC19. mount the indoor unit and ensure that the screws are fastened securely	1	2	-	-
PC20. place the outdoor unit at a suitable location and attach it firmly to wall/floor	1	2	-	-
PC21. connect the indoor and the outdoor units using the field copper pipe of appropriate size and interconnecting cables	1	2	-	-
PC22. align the air conditioner according to the instruction manual	1	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. connect the power cord with the circuit breaker switch, start the AC and check the functioning of AC by using remote	1	2	-	-
PC24. check the air conditioning gas and fill additional gas (if required) as recommended in the manufacturer's manual	1	2	-	-
PC25. demonstrate to the customer about the features and utility of air conditioner	1	2	-	-
PC26. guide the customer on proper placement, day to day care activities and precautions while using the air conditioner	-	1	-	-
<i>Carryout troubleshooting and repairing of the air conditioner</i>	12	17	-	-
PC27. enquire about the problems/unusual conditions noticed on the equipment from the customer	1	1	-	-
PC28. check the air conditioner for any servicing requirements and clean the air conditioner filter, indoor and outdoor unit, drain hose etc. as per the SOP	1	2	-	-
PC29. carry out troubleshooting activities to identify the faults such as power supply failure, less cooling, gas leakage, compressor failure etc. and faulty component in the AC	1	3	-	-
PC30. refill the refrigerant gas if required by following instructions in manufacturer manual	1	1	-	-
PC31. unplug the unit and carry out basic tests such as power supply inspection, volt ampere test and earth test power supply, compressor, condenser etc.	1	2	-	-
PC32. separate and inspect every module of the unit if the fault is not identified through basic tests	1	1	-	-
PC33. inspect major components and identify that the faulty component to be repaired or replaced	1	2	-	-
PC34. dismantle the component for carrying out repair or replacement after disconnecting it from power supply	1	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC35. remove and replace the faulty module with a functional one, either on a second visit or as pre-identified and collected from the service centre, if the problem is at the PCB level or components that cannot be replaced at site	1	2	-	-
PC36. reassemble the module and air conditioner in complete and connect to power supply for checking the working	1	1	-	-
PC37. check all the modules working as per specifications	1	1	-	-
PC38. if the problem cannot be serviced onsite, then sent the unit to service center	1	-	-	-
<i>Carryout post installation and repairing activities</i>	3	5	-	-
PC39. clear up the packaging material waste and dispose as per company's norms	1	1	-	-
PC40. collect the payment if the unit is not in warranty and complete the documentation	1	1	-	-
PC41. fill the installation or service report and take acknowledgment from the customer	1	2	-	-
PC42. document the work completed for future records	-	1	-	-
NOS Total	40	60	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3162
NOS Name	Installation & Repair of Air Conditioner
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
NSQF Level	4
Credits	5
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

Qualification Pack

ELE/N3163: Installation and Repair of Dish Washer

Description

This unit is about performing installation and repairing of the dish washer as per the specifications of the manufacturer and consultation with the customer addressing his/her needs

Scope

The scope covers the following :

- Prepare for installation and repairing of dish washer
- Install dish washer
- Carryout troubleshooting and repairing of the dish washer
- Carryout post installation and repairing activities

Elements and Performance Criteria

Prepare for installation and repairing of dish washer

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

- PC1.** obtain the information and details of the customer for installation and repairing work
- PC2.** collect the necessary tools and equipment required for installation and repairing work
- PC3.** check the functionality of tools and equipment before use

Install dish washer

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

- PC4.** use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards
- PC5.** follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments
- PC6.** remove the dish washer packaging and check the product specifications with the billing invoice as per the instructions in manufacturer manual and SOP
- PC7.** check that all supporting accessories purchased are there in the pack
- PC8.** identify the location to fix the dish washer as close to the sink as possible for ease of connection to the water and drain pipes and as per the need of customer
- PC9.** check for the availability of power outlet, surface level, clearance with wall or cabinet etc. needed for installing the dish washer as per the instructions in manufacturer manual and SOP
- PC10.** make cuts for hoses and electric cables in the shelf if required
- PC11.** place the dish washer properly at levelled surface and install moisture barrier, water supply hose, drain hose, other parts and accessories as per the instructions in manufacturer manual and SOP
- PC12.** plug the power cord in the power outlet, start the dish washer and open the water supply valve
- PC13.** operate and check that there are no leaks and the machine is in a safe and stable condition

Qualification Pack

PC14. demonstrate the features, functioning and use of control panel of dish washer to the customer as per the instructions in manufacturer manual and SOP

PC15. guide the customer about day-to-day care activities and precautions while using the dish washer as mentioned in product manual

Carryout troubleshooting and repairing of the dish washer

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

PC16. enquire about the problems/unusual conditions noticed on the equipment from the customer

PC17. check the dish washer for any servicing requirements and clean the dish washer, filter, drain and water hose etc. as per the SOP

PC18. diagnose the fault in the unit as per customer interaction and initial inspection

PC19. unplug the unit, carry out basic tests as per the instructions in manufacturer manual and SOP

PC20. inspect major components and power supply to reach to the faulty component to be repaired or replaced

PC21. dismantle the component for carrying out repair or replacement as per the instructions in manufacturer manual and SOP

PC22. remove the faulty component and replace it onsite if possible or send the report to service center for replacement

PC23. replace the component in second visit to the site

PC24. reassemble the unit post maintenance and do the trial run

PC25. demonstrate and confirm functionality of the dish washer with the customer

PC26. if the problem cannot be serviced onsite, report and then sent the unit to service center

Carryout post installation and repairing activities

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

PC27. clear up the packaging material waste and dispose as per company's norms

PC28. collect the payment if the unit is not in warranty and complete the documentation

PC29. fill the installation or service report and take acknowledgment from the customer

PC30. document the work completed for future records

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant legislation, standards, policies, and procedures followed in the organization

KU2. health and safety requirements applicable in the workplace

KU3. various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.

KU4. methods of accident prevention

KU5. importance of using protective clothing/equipment while working

KU6. general principles for identifying and controlling health and safety risks

KU7. main hazards and preventive as well as control measures while working with different types of equipment

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- KU8.** importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control
- KU9.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment
- KU10.** safe working practices while working at various hazardous sites
- KU11.** health effects associated with exposure to noise and vibration and the appropriate control measures
- KU12.** installation site requirements (structural requirements, ventilation, etc.)
- KU13.** different types of dish washers and differences in their operation
- KU14.** different features and functionalities of various models
- KU15.** procedure of installing the dish washer
- KU16.** method of cleaning and its use
- KU17.** functioning of various parts of the dish washer
- KU18.** Troubleshooting and repairing of faults in dish washer

Generic Skills (GS)

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

- GS1.** note the information related to work and processes
- GS2.** write reports and observations related to work in English/regional language
- GS3.** read and interpret and process flowcharts for all operations
- GS4.** read manuals and operation documents to understand the Equipment used into operation
- GS5.** discuss task lists, schedules and activities with the seniors and team members
- GS6.** follow organization rule-based decision-making process
- GS7.** take decisions with systematic course of actions and/or response
- GS8.** plan and organize tasks to meet deadlines
- GS9.** find ways of modifying difficult operating stages to make it operation friendly
- GS10.** apply domain information to set and define operation parameters that ensures economy and quality of the product
- GS11.** analyse the complexity of work to determine if it can be successfully carried out or needs to be referred to a superior/specialist
- GS12.** recognise a workplace problem and take suitable action to resolve it

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation and repairing of dish washer</i>	4	3	-	-
PC1. obtain the information and details of the customer for installation and repairing work	1	-	-	-
PC2. collect the necessary tools and equipment required for installation and repairing work	2	1	-	-
PC3. check the functionality of tools and equipment before use	1	2	-	-
<i>Install dish washer</i>	18	28	-	-
PC4. use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards	1	1	-	-
PC5. follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments	-	1	-	-
PC6. remove the dish washer packaging and check the product specifications with the billing invoice as per the instructions in manufacturer manual and SOP	2	1	-	-
PC7. check that all supporting accessories purchased are there in the pack	2	-	-	-
PC8. identify the location to fix the dish washer as close to the sink as possible for ease of connection to the water and drain pipes and as per the need of customer	1	2	-	-
PC9. check for the availability of power outlet, surface level, clearance with wall or cabinet etc. needed for installing the dish washer as per the instructions in manufacturer manual and SOP	2	3	-	-
PC10. make cuts for hoses and electric cables in the shelve if required	1	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. place the dish washer properly at levelled surface and install moisture barrier, water supply hose, drain hose, other parts and accessories as per the instructions in manufacturer manual and SOP	3	5	-	-
PC12. plug the power cord in the power outlet, start the dish washer and open the water supply valve	2	4	-	-
PC13. operate and check that there are no leaks and the machine is in a safe and stable condition	1	3	-	-
PC14. demonstrate the features, functioning and use of control panel of dish washer to the customer as per the instructions in manufacturer manual and SOP	2	4	-	-
PC15. guide the customer about day-to-day care activities and precautions while using the dish washer as mentioned in product manual	1	1	-	-
<i>Carryout troubleshooting and repairing of the dish washer</i>	15	24	-	-
PC16. enquire about the problems/unusual conditions noticed on the equipment from the customer	1	1	-	-
PC17. check the dish washer for any servicing requirements and clean the dish washer, filter, drain and water hose etc. as per the SOP	2	4	-	-
PC18. diagnose the fault in the unit as per customer interaction and initial inspection	2	4	-	-
PC19. unplug the unit, carry out basic tests as per the instructions in manufacturer manual and SOP	2	3	-	-
PC20. inspect major components and power supply to reach to the faulty component to be repaired or replaced	1	3	-	-
PC21. dismantle the component for carrying out repair or replacement as per the instructions in manufacturer manual and SOP	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. remove the faulty component and replace it onsite if possible or send the report to service center for replacement	2	3	-	-
PC23. replace the component in second visit to the site	1	2	-	-
PC24. reassemble the unit post maintenance and do the trial run	1	1	-	-
PC25. demonstrate and confirm functionality of the dish washer with the customer	1	-	-	-
PC26. if the problem cannot be serviced onsite, report and then sent the unit to service center	1	1	-	-
<i>Carryout post installation and repairing activities</i>	3	5	-	-
PC27. clear up the packaging material waste and dispose as per company's norms	1	1	-	-
PC28. collect the payment if the unit is not in warranty and complete the documentation	1	1	-	-
PC29. fill the installation or service report and take acknowledgment from the customer	1	2	-	-
PC30. document the work completed for future records	-	1	-	-
NOS Total	40	60	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3163
NOS Name	Installation and Repair of Dish Washer
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
NSQF Level	4
Credits	4
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

Qualification Pack

ELE/N3169: Installation and repair of Refrigerator (DIOS)

Description

This unit is about performing installation and onsite repairing of the refrigerator (DIOS) as per the specifications of the manufacturer and consultation with the customer addressing his/her needs.

Scope

The scope covers the following :

- Prepare for installation and repairing of refrigerator (DIOS)
- Install refrigerator (DIOS)
- Carryout troubleshooting and repairing of the refrigerator (DIOS)
- Carryout post installation and repairing activities

Elements and Performance Criteria

Prepare for installation and repairing of refrigerator (DIOS)

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

- PC1.** obtain the information and details of the customer for installation and repairing work
- PC2.** collect the necessary tools and equipment required for installation and repairing work
- PC3.** check the functionality of tools and equipment before use

Install refrigerator (DIOS)

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

- PC4.** use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards
- PC5.** follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments
- PC6.** remove the refrigerator (DIOS) packaging and check the product specifications with the billing invoice for colour, make and capacity
- PC7.** check that all supporting accessories purchased are there in the pack
- PC8.** identify the space to place the refrigerator as per the need of customer
- PC9.** check for the availability of power point, surface level, distance from wall etc. needed for placing the refrigerator (DIOS) as per the instructions in manufacturer manual and SOP
- PC10.** place the appliance on a firm and level floor and fix all the accessories and parts i.e. shelves, baskets etc. as per the instructions in manufacturer manual and SOP
- PC11.** be careful not to expose the rear of the appliance and not to place the appliance in a damp and dusty place when installing
- PC12.** connect the refrigerator to the power point and set temperature parameters as per the instructions in manufacturer manual and SOP
- PC13.** demonstrate and explain the various functions and features of refrigerator (DIOS) on various temperature settings and use of control panel to the customer

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- PC14.** ensure that the outlet socket is properly grounded, and that the earth pin on the power cord is not damaged or removed from the power plug
- PC15.** install the smart feature application of refrigerator (DIOS) in customer's smartphone and connect the refrigerator with customer's smartphone
- PC16.** demonstrate how to operate and monitor the functioning of refrigerator through application
- PC17.** guide the customer on day-to-day care activities and precautions while using the refrigerator (DIOS) as mentioned in product manual

Carryout troubleshooting and repairing of the refrigerator (DIOS)

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

- PC18.** enquire about the problems/unusual conditions noticed on the equipment from the customer
- PC19.** use the smart feature app installed in customer's smartphone to diagnose the issues in the refrigerator (DIOS) by following instructions in manufacturer manual
- PC20.** refill the refrigerant gas if required by following instructions in manufacturer manual
- PC21.** carry out troubleshooting activities to identify the faults and faulty component in the refrigerator (DIOS)
- PC22.** unplug the unit, carry out basic tests such as power supply inspection, volt ampere test and earth test power supply, compressor, condenser etc. as per the instructions in manufacturer manual and SOP
- PC23.** remove the faulty component for carrying out repair or replacement after disconnecting it from power supply
- PC24.** repair the fault if possible or send the report to service center for replacement
- PC25.** replace the component in second visit to the site
- PC26.** reassemble the module and refrigerator in complete and connect it to power supply for checking the working
- PC27.** check all the modules working as per specifications
- PC28.** if the problem cannot be serviced onsite, then sent the unit to service center for repairing

Carryout post installation and repairing activities

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

- PC29.** clear up the packaging material waste and dispose as per company's norms
- PC30.** collect the payments if the unit is not in warranty and complete the documentation
- PC31.** fill the installation or service report and take acknowledgment from the customer
- PC32.** document the work completed for future records

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant legislation, standards, policies, and procedures followed in the organization
- KU2.** health and safety requirements applicable in the workplace
- KU3.** various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.
- KU4.** methods of accident prevention

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- KU5.** importance of using protective clothing/equipment while working
- KU6.** general principles for identifying and controlling health and safety risks
- KU7.** main hazards and preventive as well as control measures while working with different types of equipment
- KU8.** importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control
- KU9.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment
- KU10.** safe working practices while working at various hazardous sites
- KU11.** health effects associated with exposure to noise and vibration and the appropriate control measures
- KU12.** basic electronics (knowledge of components such as diode, transformer, LED, photo transistor, capacitor, resistor, inductor, thermistor, ICs)
- KU13.** functioning of various electromechanical parts of the refrigerator
- KU14.** fundamentals of electricity such as ohms law, difference between ac and dc
- KU15.** method of refrigeration, its use and functioning of refrigerator sealed system
- KU16.** refrigeration cycle and functioning of the appliance and its various modules
- KU17.** types of refrigerants such as R12, R22, R134a, R290, R600a, R410, R32 use of different brazing sticks, types of brazing torches and their application
- KU18.** installation site requirements (structural requirements, ventilation, etc.)
- KU19.** different features and functionalities of various refrigerator (DIOS) models
- KU20.** procedure of installing the refrigerator (DIOS)
- KU21.** functioning of various parts of the refrigerator (DIOS)
- KU22.** troubleshooting and repairing activities for refrigerator (DIOS)
- KU23.** reports and documents need to fill and maintain related to installation and repairing work

Generic Skills (GS)

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

- GS1.** record the information related to work and processes
- GS2.** write reports and observations related to work in English/regional language
- GS3.** read and interpret and process flowchart for all operations
- GS4.** read manuals and operation documents to understand the Equipment used into operation
- GS5.** discuss task lists, schedules and activities with the seniors and team members
- GS6.** follow organization rule-based decision making process
- GS7.** take decisions with systematic course of actions and/or response
- GS8.** plan and organize tasks to meet deadlines
- GS9.** find ways of modifying difficult operating stages to make it operation friendly
- GS10.** apply domain information to set and define operation parameters that ensures economy and quality of the product



Qualification Pack

- GS11.** analyze the complexity of work to determine if it can be successfully carried out or needs to be referred to a superior/specialist
- GS12.** recognize a workplace problem and take suitable action to resolve it

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation and repairing of refrigerator (DIOS)</i>	4	3	-	-
PC1. obtain the information and details of the customer for installation and repairing work	1	-	-	-
PC2. collect the necessary tools and equipment required for installation and repairing work	2	1	-	-
PC3. check the functionality of tools and equipment before use	1	2	-	-
<i>Install refrigerator (DIOS)</i>	18	26	-	-
PC4. use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards	1	1	-	-
PC5. follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments	-	1	-	-
PC6. remove the refrigerator (DIOS) packaging and check the product specifications with the billing invoice for colour, make and capacity	-	1	-	-
PC7. check that all supporting accessories purchased are there in the pack	2	-	-	-
PC8. identify the space to place the refrigerator as per the need of customer	1	1	-	-
PC9. check for the availability of power point, surface level, distance from wall etc. needed for placing the refrigerator (DIOS) as per the instructions in manufacturer manual and SOP	2	3	-	-
PC10. place the appliance on a firm and level floor and fix all the accessories and parts i.e. shelves, baskets etc. as per the instructions in manufacturer manual and SOP	2	4	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. be careful not to expose the rear of the appliance and not to place the appliance in a damp and dusty place when installing	1	-	-	-
PC12. connect the refrigerator to the power point and set temperature parameters as per the instructions in manufacturer manual and SOP	1	2	-	-
PC13. demonstrate and explain the various functions and features of refrigerator (DIOS) on various temperature settings and use of control panel to the customer	2	4	-	-
PC14. ensure that the outlet socket is properly grounded, and that the earth pin on the power cord is not damaged or removed from the power plug	1	1	-	-
PC15. install the smart feature application of refrigerator (DIOS) in customer's smartphone and connect the refrigerator with customer's smartphone	2	3	-	-
PC16. demonstrate how to operate and monitor the functioning of refrigerator through application	2	4	-	-
PC17. guide the customer on day-to-day care activities and precautions while using the refrigerator (DIOS) as mentioned in product manual	1	1	-	-
<i>Carryout troubleshooting and repairing of the refrigerator (DIOS)</i>	15	26	-	-
PC18. enquire about the problems/unusual conditions noticed on the equipment from the customer	1	1	-	-
PC19. use the smart feature app installed in customer's smartphone to diagnose the issues in the refrigerator (DIOS) by following instructions in manufacturer manual	2	3	-	-
PC20. refill the refrigerant gas if required by following instructions in manufacturer manual	1	2	-	-
PC21. carry out troubleshooting activities to identify the faults and faulty component in the refrigerator (DIOS)	2	4	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. unplug the unit, carry out basic tests such as power supply inspection, volt ampere test and earth test power supply, compressor, condenser etc. as per the instructions in manufacturer manual and SOP	2	4	-	-
PC23. remove the faulty component for carrying out repair or replacement after disconnecting it from power supply	1	2	-	-
PC24. repair the fault if possible or send the report to service center for replacement	2	3	-	-
PC25. replace the component in second visit to the site	1	2	-	-
PC26. reassemble the module and refrigerator in complete and connect it to power supply for checking the working	1	2	-	-
PC27. check all the modules working as per specifications	1	2	-	-
PC28. if the problem cannot be serviced onsite, then sent the unit to service center for repairing	1	1	-	-
<i>Carryout post installation and repairing activities</i>	3	5	-	-
PC29. clear up the packaging material waste and dispose as per company's norms	1	1	-	-
PC30. collect the payments if the unit is not in warranty and complete the documentation	1	1	-	-
PC31. fill the installation or service report and take acknowledgment from the customer	1	2	-	-
PC32. document the work completed for future records	-	1	-	-
NOS Total	40	60	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3169
NOS Name	Installation and repair of Refrigerator (DIOS)
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
NSQF Level	4
Credits	4
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

Qualification Pack

ELE/N3170: Installation and repair of washing machine

Description

This unit is about performing installation and repairing of the washing machine as per the specifications of the manufacturer and consultation with the customer addressing his/her needs

Scope

The scope covers the following :

- Prepare for installation and repairing of washing machine
- Install washing machine
- Carryout troubleshooting and repairing of the washing machine
- Carryout post installation and repairing activities

Elements and Performance Criteria

Prepare for installation and repairing of washing machine

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

- PC1.** obtain the information and details of the customer for installation and repairing work
- PC2.** collect the necessary tools and equipment required for installation and repairing work
- PC3.** check the functionality of tools and equipment before use

Install washing machine

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

- PC4.** use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards
- PC5.** follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments
- PC6.** remove the washing machine packaging in which it was shipped to customer and check the product specifications with the billing invoice to identify type (top load or front load, semi-automatic or fully automatic), make and capacity of washing machine
- PC7.** check that all supporting accessories purchased are there in the pack
- PC8.** identify the place to fix the washing machine as per the need of customer
- PC9.** check for the availability of power outlet, surface level, water supply etc. needed for installing the water purifier as per the instructions in manufacturer manual and SOP
- PC10.** place the washing machine properly at levelled surface and at appropriate distance from the water supply as per SOP
- PC11.** connect the water hose and rain pipe with the washing machine and water supply tap as per the instructions in manufacturer manual and SOP
- PC12.** ensure that the machine is placed against an exterior wall to the drain hose running along the inside wall
- PC13.** remove all transport pins inside the drum of the washing machine before starting the machine

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- PC14.** plug the power cord in the power outlet, start the washing machine and open the water supply valve
- PC15.** operate and check that there are no leaks and the machine is in a safe and stable condition
- PC16.** demonstrate the features, functioning and use of control panel of washing machine to the customer as per the instructions in manufacturer manual and SOP
- PC17.** guide the customer about day-to-day care activities and precautions while using the washing machine as mentioned in product manual

Carryout troubleshooting and repairing of the washing machine

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

- PC18.** enquire about the problems/unusual conditions noticed on the equipment from the customer
- PC19.** check the washing machine for any servicing requirements and clean the washing machine drum, filter, drain and water hose etc. as per the SOP
- PC20.** diagnose the fault in the unit as per customer interaction and initial inspection
- PC21.** identify the cycle(fill/wash and rinse/spin and drain) during which the problem occurs based on customer interaction
- PC22.** ensure that the unit is unplugged before carrying out any tests
- PC23.** inspect basic parts such as valve strainers, fill hose, drain line, pressure tube, water valves, pressure sensor
- PC24.** carry out basic tests such as power supply inspection, volt ampere and continuity tests
- PC25.** dismantle the washing machine and check for faults in the control/service panel, lid switch, water level control switch, timer, etc.
- PC26.** follow the electrical circuit path and inspect each component in that sequence in order to identify any electrical faults in the unit
- PC27.** ensure that all parts such as motors, transformer, pulley and belt system, motor starting switch, solenoid, clutch lining have been inspected
- PC28.** send to factory for in depth diagnosis, if unable to identify problem at site
- PC29.** rectify the problem in the water source, ensure that water supply is turned on and that there are no kinks in the hoses
- PC30.** inspect the soap deposition inside the machine, clean the same and run the machine through a complete wash cycle
- PC31.** select the right spares according to recorded complaints at the customer care
- PC32.** reassemble the unit post maintenance and do the trial run
- PC33.** demonstrate and confirm functionality of the washing machine with the customer

Carryout post installation and repairing activities

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

- PC34.** clear up the packaging material waste and dispose as per company's norms
- PC35.** collect the payment if the unit is not in warranty and complete the documentation
- PC36.** fill the installation or service report and take acknowledgment from the customer
- PC37.** document the work completed for future records

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

Qualification Pack

- KU1.** relevant legislation, standards, policies, and procedures followed in the organization
- KU2.** health and safety requirements applicable in the workplace
- KU3.** various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.
- KU4.** methods of accident prevention
- KU5.** importance of using protective clothing/equipment while working
- KU6.** general principles for identifying and controlling health and safety risks
- KU7.** main hazards and preventive as well as control measures while working with different types of equipment
- KU8.** importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control
- KU9.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment
- KU10.** safe working practices while working at various hazardous sites
- KU11.** health effects associated with exposure to noise and vibration and the appropriate control measures
- KU12.** installation site requirements (structural requirements, ventilation, etc.)
- KU13.** different types of washing machines, e.g., front load and top load, automatic or semi-automatic and differences in their operation
- KU14.** different features and functionalities of various models
- KU15.** procedure of installing the washing machine
- KU16.** method of cleaning and its use
- KU17.** functioning of various parts of the washing machine
- KU18.** Troubleshooting and repairing of faults in washing machine

Generic Skills (GS)

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

- GS1.** note the information related to work and processes
- GS2.** write reports and observations related to work in English/regional language
- GS3.** read and interpret and process flowcharts for all operations
- GS4.** read manuals and operation documents to understand the Equipment used into operation
- GS5.** discuss task lists, schedules and activities with the seniors and team members
- GS6.** follow organization rule-based decision-making process
- GS7.** take decisions with systematic course of actions and/or response
- GS8.** plan and organize tasks to meet deadlines
- GS9.** find ways of modifying difficult operating stages to make it operation friendly
- GS10.** apply domain information to set and define operation parameters that ensures economy and quality of the product
- GS11.** analyse the complexity of work to determine if it can be successfully carried out or needs to be referred to a superior/specialist



Qualification Pack

GS12. recognise a workplace problem and take suitable action to resolve it

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation and repairing of washing machine</i>	4	3	-	-
PC1. obtain the information and details of the customer for installation and repairing work	1	-	-	-
PC2. collect the necessary tools and equipment required for installation and repairing work	2	1	-	-
PC3. check the functionality of tools and equipment before use	1	2	-	-
<i>Install washing machine</i>	17	25	-	-
PC4. use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards	1	1	-	-
PC5. follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments	-	1	-	-
PC6. remove the washing machine packaging in which it was shipped to customer and check the product specifications with the billing invoice to identify type (top load or front load, semi-automatic or fully automatic), make and capacity of washing machine	1	1	-	-
PC7. check that all supporting accessories purchased are there in the pack	2	-	-	-
PC8. identify the place to fix the washing machine as per the need of customer	1	1	-	-
PC9. check for the availability of power outlet, surface level, water supply etc. needed for installing the water purifier as per the instructions in manufacturer manual and SOP	1	2	-	-
PC10. place the washing machine properly at levelled surface and at appropriate distance from the water supply as per SOP	1	2	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. connect the water hose and rain pipe with the washing machine and water supply tap as per the instructions in manufacturer manual and SOP	1	2	-	-
PC12. ensure that the machine is placed against an exterior wall to the drain hose running along the inside wall	1	-	-	-
PC13. remove all transport pins inside the drum of the washing machine before starting the machine	1	2	-	-
PC14. plug the power cord in the power outlet, start the washing machine and open the water supply valve	2	4	-	-
PC15. operate and check that there are no leaks and the machine is in a safe and stable condition	2	4	-	-
PC16. demonstrate the features, functioning and use of control panel of washing machine to the customer as per the instructions in manufacturer manual and SOP	2	4	-	-
PC17. guide the customer about day-to-day care activities and precautions while using the washing machine as mentioned in product manual	1	1	-	-
<i>Carryout troubleshooting and repairing of the washing machine</i>	16	27	-	-
PC18. enquire about the problems/unusual conditions noticed on the equipment from the customer	1	1	-	-
PC19. check the washing machine for any servicing requirements and clean the washing machine drum, filter, drain and water hose etc. as per the SOP	1	4	-	-
PC20. diagnose the fault in the unit as per customer interaction and initial inspection	2	4	-	-
PC21. identify the cycle(fill/wash and rinse/spin and drain) during which the problem occurs based on customer interaction	1	2	-	-
PC22. ensure that the unit is unplugged before carrying out any tests	1	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. inspect basic parts such as valve strainers, fill hose, drain line, pressure tube, water valves, pressure sensor	1	4	-	-
PC24. carry out basic tests such as power supply inspection, volt ampere and continuity tests	1	2	-	-
PC25. dismantle the washing machine and check for faults in the control/service panel, lid switch, water level control switch, timer, etc.	1	2	-	-
PC26. follow the electrical circuit path and inspect each component in that sequence in order to identify any electrical faults in the unit	1	1	-	-
PC27. ensure that all parts such as motors, transformer, pulley and belt system, motor starting switch, solenoid, clutch lining have been inspected	1	-	-	-
PC28. send to factory for in depth diagnosis, if unable to identify problem at site	1	1	-	-
PC29. rectify the problem in the water source, ensure that water supply is turned on and that there are no kinks in the hoses	1	1	-	-
PC30. inspect the soap deposition inside the machine, clean the same and run the machine through a complete wash cycle	1	1	-	-
PC31. select the right spares according to recorded complaints at the customer care	1	1	-	-
PC32. reassemble the unit post maintenance and do the trial run	1	2	-	-
PC33. demonstrate and confirm functionality of the washing machine with the customer	-	1	-	-
<i>Carryout post installation and repairing activities</i>	3	5	-	-
PC34. clear up the packaging material waste and dispose as per company's norms	1	1	-	-
PC35. collect the payment if the unit is not in warranty and complete the documentation	1	1	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC36. fill the installation or service report and take acknowledgment from the customer	1	2	-	-
PC37. document the work completed for future records	-	1	-	-
NOS Total	40	60	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3170
NOS Name	Installation and repair of washing machine
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
NSQF Level	4
Credits	4
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

Qualification Pack

ELE/N3164: Installation and repair of OLED/Monitor TV

Description

This unit is about performing installation and repairing of the OLED TV/monitor as per the specifications of the manufacturer and consultation with the customer addressing his/her needs

Scope

The scope covers the following :

- Prepare for installation and repairing of OLED/monitor
- Install OLED TV/monitor
- Carryout troubleshooting and repairing of the OLED TV/monitor
- Carryout post installation and repairing activities

Elements and Performance Criteria

Prepare for installation and repairing of OLED/monitor

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

- PC1.** obtain the information and details of the customer for installation and repairing work
- PC2.** collect the necessary tools and equipment required for installation and repairing work
- PC3.** check the functionality of tools and equipment before use

Install OLED TV/monitor

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

- PC4.** use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards
- PC5.** follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments
- PC6.** remove the OLED TV/monitor packaging and check the product specifications with the billing invoice as per the instructions in manufacturer manual and SOP
- PC7.** check that all supporting accessories purchased are there in the pack
- PC8.** identify the space to place the OLED TV/monitor as per the need of customer
- PC9.** if customer wants to install the OLED TV/monitor on a table, place it on the table carefully and plug the power cord in power outlet
- PC10.** if customer wants to install the OLED TV/monitor on a wall, then first fix the wall mounting bracket and its accessories on the wall as per the instructions in manufacturer manual and SOP
- PC11.** remove the OLED TV/monitor stand, fix the OLED TV/monitor on wall mounting bracket properly and plug the power cord in power outlet as per the instructions in manufacturer manual and SOP
- PC12.** connect the OLED TV to a wall antenna socket or a satellite dish socket and monitor with the PC as per the instructions in manufacturer manual and SOP

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- PC13.** turn on the OLED TV/monitor and adjust the MENU settings as per customer requirements and instructions in manufacturer manual
- PC14.** connect the smart devices with OLED TV/monitor as per the customer requirements and instructions in manufacturer manual
- PC15.** demonstrate the functions of OLED TV/monitor to the customer
- PC16.** guide the customer on proper placement, day to care and precautions while using the OLED TV/monitor

Carryout troubleshooting and repairing of OLED TV/monitor

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

- PC17.** enquire about the problems/unusual conditions noticed on the equipment from the customer
- PC18.** conduct the physical inspection and check the OLED TV/monitor for diagnosing the fault
- PC19.** unplug the unit, carry out basic tests such as power supply inspection, power supply setting, remote control functioning, etc. as per the instructions in manufacturer manual and SOP
- PC20.** inspect major components and power supply to reach to the faulty component to be repaired or replaced
- PC21.** dismantle the component for carrying out repair or replacement as per the instructions in manufacturer manual and SOP
- PC22.** remove the faulty component and send the report to service center for replacement
- PC23.** replace the component in second visit to the site
- PC24.** reassemble the OLED TV/monitor in complete, install and connect it to power supply for checking the working
- PC25.** check all the modules working as per specifications
- PC26.** If the problem cannot be serviced onsite, report and then sent the unit to service center

Carryout post installation and repairing activities

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

- PC27.** clear up the packaging material waste and dispose as per company's norms
- PC28.** collect the payment if the unit is not in warranty and complete the documentation
- PC29.** fill the installation or service report and take acknowledgment from the customer
- PC30.** document the work completed for future records

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant legislation, standards, policies, and procedures followed in the organization
- KU2.** health and safety requirements applicable in the workplace
- KU3.** various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.
- KU4.** methods of accident prevention
- KU5.** importance of using protective clothing/equipment while working
- KU6.** general principles for identifying and controlling health and safety risks

Qualification Pack

- KU7.** main hazards and preventive as well as control measures while working with different types of equipment
- KU8.** importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control
- KU9.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment
- KU10.** safe working practices while working at various hazardous sites
- KU11.** health effects associated with exposure to noise and vibration and the appropriate control measures
- KU12.** fundamentals of electricity such as ohms law, difference between ac and dc
- KU13.** basic electronics (knowledge of components such as diode, transformer, LED, photo transistor, capacitor, resistor, inductor, thermistor, ICs)
- KU14.** site installation requirements (structural requirements, tools etc.)
- KU15.** different features and functionalities of various OLED TV/monitor models
- KU16.** procedure of installing the OLED TV/monitor
- KU17.** functioning of the OLED TV/monitor and its various modules
- KU18.** functioning of various parts of the OLED TV/monitor
- KU19.** troubleshooting and repairing activities for OLED TV/monitor
- KU20.** reports and documents need to fill and maintain related to installation and repairing work

Generic Skills (GS)

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

- GS1.** note the information related to work and processes
- GS2.** write reports and observations related to work in English/regional language
- GS3.** read and interpret and process flowchart for all operations
- GS4.** read manuals and operation documents to understand the Equipment used into operation
- GS5.** discuss task lists, schedules and activities with the seniors and team members
- GS6.** follow organization rule-based decision making process
- GS7.** take decisions with systematic course of actions and/or response
- GS8.** plan and organize tasks to meet deadlines
- GS9.** find ways of modifying difficult operating stages to make it operation friendly
- GS10.** apply domain information to set and define operation parameters that ensures economy and quality of the product
- GS11.** analyze the complexity of work to determine if it can be successfully carried out or needs to be referred to a superior/specialist
- GS12.** recognize a workplace problem and take suitable action to resolve it

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation and repairing of OLED/monitor</i>	4	3	-	-
PC1. obtain the information and details of the customer for installation and repairing work	1	-	-	-
PC2. collect the necessary tools and equipment required for installation and repairing work	2	1	-	-
PC3. check the functionality of tools and equipment before use	1	2	-	-
<i>Install OLED TV/monitor</i>	20	28	-	-
PC4. use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards	1	1	-	-
PC5. follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments	-	1	-	-
PC6. remove the OLED TV/monitor packaging and check the product specifications with the billing invoice as per the instructions in manufacturer manual and SOP	1	2	-	-
PC7. check that all supporting accessories purchased are there in the pack	2	-	-	-
PC8. identify the space to place the OLED TV/monitor as per the need of customer	1	2	-	-
PC9. if customer wants to install the OLED TV/monitor on a table, place it on the table carefully and plug the power cord in power outlet	1	2	-	-
PC10. if customer wants to install the OLED TV/monitor on a wall, then first fix the wall mounting bracket and its accessories on the wall as per the instructions in manufacturer manual and SOP	3	4	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. remove the OLED TV/monitor stand, fix the OLED TV/monitor on wall mounting bracket properly and plug the power cord in power outlet as per the instructions in manufacturer manual and SOP	3	4	-	-
PC12. connect the OLED TV to a wall antenna socket or a satellite dish socket and monitor with the PC as per the instructions in manufacturer manual and SOP	2	3	-	-
PC13. turn on the OLED TV/monitor and adjust the MENU settings as per customer requirements and instructions in manufacturer manual	2	3	-	-
PC14. connect the smart devices with OLED TV/monitor as per the customer requirements and instructions in manufacturer manual	1	2	-	-
PC15. demonstrate the functions of OLED TV/monitor to the customer	2	3	-	-
PC16. guide the customer on proper placement, day to care and precautions while using the OLED TV/monitor	1	1	-	-
<i>Carryout troubleshooting and repairing of OLED TV/monitor</i>	13	24	-	-
PC17. enquire about the problems/unusual conditions noticed on the equipment from the customer	1	1	-	-
PC18. conduct the physical inspection and check the OLED TV/monitor for diagnosing the fault	2	4	-	-
PC19. unplug the unit, carry out basic tests such as power supply inspection, power supply setting, remote control functioning, etc. as per the instructions in manufacturer manual and SOP	2	4	-	-
PC20. inspect major components and power supply to reach to the faulty component to be repaired or replaced	2	3	-	-
PC21. dismantle the component for carrying out repair or replacement as per the instructions in manufacturer manual and SOP	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. remove the faulty component and send the report to service center for replacement	1	2	-	-
PC23. replace the component in second visit to the site	1	2	-	-
PC24. reassemble the OLED TV/monitor in complete, install and connect it to power supply for checking the working	1	2	-	-
PC25. check all the modules working as per specifications	1	2	-	-
PC26. If the problem cannot be serviced onsite, report and then sent the unit to service center	1	2	-	-
<i>Carryout post installation and repairing activities</i>	3	5	-	-
PC27. clear up the packaging material waste and dispose as per company's norms	1	1	-	-
PC28. collect the payment if the unit is not in warranty and complete the documentation	1	1	-	-
PC29. fill the installation or service report and take acknowledgment from the customer	1	2	-	-
PC30. document the work completed for future records	-	1	-	-
NOS Total	40	60	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3164
NOS Name	Installation and repair of OLED/Monitor TV
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
NSQF Level	4
Credits	3
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

Qualification Pack

ELE/N3165: Installation and Repair of Basic Refrigerator and Washing Machine

Description

This unit is about performing installation and onsite repairing of the basic refrigerator and washing machine as per the specifications of the manufacturer and consultation with the customer addressing his/her needs

Scope

The scope covers the following :

- Prepare for installation and repairing work
- Installation and servicing of refrigerator
- Installation and servicing of washing machine
- Carryout post installation and repairing activities

Elements and Performance Criteria

Prepare for installation and repairing work

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

- PC1.** obtain the information and details of the customer for installation and repairing work
- PC2.** collect the necessary tools and equipment required for installation and repairing work
- PC3.** check the functionality of tools and equipment before use
- PC4.** use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards
- PC5.** follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments

Installation and servicing of refrigerator

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

- PC6.** remove the refrigerator packaging and check the product specifications with the billing invoice for colour, make and capacity
- PC7.** check that all supporting accessories purchased are there in the pack
- PC8.** identify the space to place the refrigerator as per the need of customer
- PC9.** check for the distance from wall, availability of power outlet, and platform height needed for placing the refrigerator
- PC10.** place the refrigerator and connect it to the power outlet
- PC11.** start the refrigerator, set temperature parameters and demonstrate the functions of refrigerator to the customer
- PC12.** guide the customer on proper placement, day to day care activities and precautions while using the refrigerator
- PC13.** enquire about the problems/unusual conditions noticed on the equipment from the customer

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- PC14.** check the refrigerator for any gas refill requirement and refill the gas as per SOP
- PC15.** carry out troubleshooting of refrigerator to identify faults i.e. gas leakage, cooling problem, compressor problem, power supply problem etc. and faulty components as per SOP
- PC16.** repair or replace the faulty component as per the requirement
- PC17.** reassemble the refrigerator in complete, install and connect it to power supply for checking the working
- PC18.** check all the modules working as per specifications
- PC19.** If the problem cannot be serviced onsite, report and then sent the unit to service center

Installation and servicing of washing machine

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

- PC20.** remove the washing machine packaging and check the product specifications with the billing invoice for colour, make and capacity
- PC21.** check that all supporting accessories purchased are there in the pack
- PC22.** identify the space to place the washing machine as per the need of customer
- PC23.** check for the distance from wall, availability of power outlet etc. needed for placing the washing machine
- PC24.** place the washing machine and install the drain hose
- PC25.** connect the washing machine and start it to demonstrate the functions of washing machine and use of wash setting buttons to the customer
- PC26.** guide the customer on proper placement, day to day care activities and precautions while using the washing machine
- PC27.** enquire about the problems/unusual conditions noticed on the equipment from the customer
- PC28.** check the washing machine for any cleaning requirement and clean the water drum, drain etc. as per SOP
- PC29.** carry out troubleshooting of washing machine to identify faults such as motor failure, power supply problem etc. and faulty components as per SOP
- PC30.** repair or replace the component as per SOP
- PC31.** reassemble the machine in complete, install and connect it to power supply for checking the working
- PC32.** check all the modules working as per specifications
- PC33.** If the problem cannot be serviced onsite, report and then sent the unit to service center

Carryout post installation and repairing activities

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

- PC34.** clear up the packaging material waste and dispose as per company's norms
- PC35.** collect the payment if the unit is not in warranty and complete the documentation
- PC36.** fill the installation or service report and take acknowledgment from the customer
- PC37.** document the work completed for future records

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant legislation, standards, policies, and procedures followed in the organization

Qualification Pack

- KU2.** health and safety requirements applicable in the workplace
- KU3.** various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc
- KU4.** methods of accident prevention
- KU5.** importance of using protective clothing/equipment while working
- KU6.** general principles for identifying and controlling health and safety risks
- KU7.** main hazards and preventive as well as control measures while working with different types of equipment
- KU8.** importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control
- KU9.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment
- KU10.** safe working practices while working at various hazardous sites
- KU11.** health effects associated with exposure to noise and vibration and the appropriate control measures
- KU12.** installation site requirements (structural requirements, ventilation, etc.)
- KU13.** different types of refrigerators and washing machine
- KU14.** different features and functionalities of various models
- KU15.** procedure of installing the refrigerators and washing machine
- KU16.** refrigeration cycle and functioning of the appliance and its various modules
- KU17.** method of refrigeration, its use and functioning of refrigerator sealed system
- KU18.** types of refrigerants such as R12, R22, R134a, R290, R600a, R410, R32 use of different brazing sticks, types of brazing torches and their application
- KU19.** troubleshooting and repairing of faults in refrigerator and washing machine

Generic Skills (GS)

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

- GS1.** note the information related to work and processes
- GS2.** write reports and observations related to work in English/regional language
- GS3.** read and interpret and process flowchart for all operations
- GS4.** read manuals and operation documents to understand the Equipment used into operation
- GS5.** discuss task lists, schedules and activities with the seniors and team members
- GS6.** follow organization rule-based decision making process
- GS7.** take decisions with systematic course of actions and/or response
- GS8.** plan and organize tasks to meet deadlines
- GS9.** find ways of modifying difficult operating stages to make it operation friendly
- GS10.** apply domain information to set and define operation parameters that ensures economy and quality of the product
- GS11.** analyze the complexity of work to determine if it can be successfully carried out or needs to be referred to a superior/specialist



Qualification Pack

GS12. recognize a workplace problem and take suitable action to resolve it

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation and repairing work</i>	5	5	-	-
PC1. obtain the information and details of the customer for installation and repairing work	1	-	-	-
PC2. collect the necessary tools and equipment required for installation and repairing work	2	1	-	-
PC3. check the functionality of tools and equipment before use	1	2	-	-
PC4. use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards	1	1	-	-
PC5. follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments	-	1	-	-
<i>Installation and servicing of refrigerator</i>	17	24	-	-
PC6. remove the refrigerator packaging and check the product specifications with the billing invoice for colour, make and capacity	1	1	-	-
PC7. check that all supporting accessories purchased are there in the pack	1	-	-	-
PC8. identify the space to place the refrigerator as per the need of customer	1	2	-	-
PC9. check for the distance from wall, availability of power outlet, and platform height needed for placing the refrigerator	1	2	-	-
PC10. place the refrigerator and connect it to the power outlet	1	1	-	-
PC11. start the refrigerator, set temperature parameters and demonstrate the functions of refrigerator to the customer	2	5	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. guide the customer on proper placement, day to day care activities and precautions while using the refrigerator	1	1	-	-
PC13. enquire about the problems/unusual conditions noticed on the equipment from the customer	1	1	-	-
PC14. check the refrigerator for any gas refill requirement and refill the gas as per SOP	1	1	-	-
PC15. carry out troubleshooting of refrigerator to identify faults i.e. gas leakage, cooling problem, compressor problem, power supply problem etc. and faulty components as per SOP	2	4	-	-
PC16. repair or replace the faulty component as per the requirement	2	3	-	-
PC17. reassemble the refrigerator in complete, install and connect it to power supply for checking the working	1	2	-	-
PC18. check all the modules working as per specifications	1	1	-	-
PC19. If the problem cannot be serviced onsite, report and then sent the unit to service center	1	-	-	-
<i>Installation and servicing of washing machine</i>	15	26	-	-
PC20. remove the washing machine packaging and check the product specifications with the billing invoice for colour, make and capacity	1	1	-	-
PC21. check that all supporting accessories purchased are there in the pack	2	-	-	-
PC22. identify the space to place the washing machine as per the need of customer	1	1	-	-
PC23. check for the distance from wall, availability of power outlet etc. needed for placing the washing machine	1	3	-	-
PC24. place the washing machine and install the drain hose	2	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. connect the washing machine and start it to demonstrate the functions of washing machine and use of wash setting buttons to the customer	2	4	-	-
PC26. guide the customer on proper placement, day to day care activities and precautions while using the washing machine	-	1	-	-
PC27. enquire about the problems/unusual conditions noticed on the equipment from the customer	-	1	-	-
PC28. check the washing machine for any cleaning requirement and clean the water drum, drain etc. as per SOP	1	2	-	-
PC29. carry out troubleshooting of washing machine to identify faults such as motor failure, power supply problem etc. and faulty components as per SOP	2	4	-	-
PC30. repair or replace the component as per SOP	1	3	-	-
PC31. reassemble the machine in complete, install and connect it to power supply for checking the working	1	2	-	-
PC32. check all the modules working as per specifications	-	1	-	-
PC33. If the problem cannot be serviced onsite, report and then sent the unit to service center	1	-	-	-
<i>Carryout post installation and repairing activities</i>	3	5	-	-
PC34. clear up the packaging material waste and dispose as per company's norms	1	1	-	-
PC35. collect the payment if the unit is not in warranty and complete the documentation	1	1	-	-
PC36. fill the installation or service report and take acknowledgment from the customer	1	2	-	-
PC37. document the work completed for future records	-	1	-	-
NOS Total	40	60	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3165
NOS Name	Installation and Repair of Basic Refrigerator and Washing Machine
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
NSQF Level	4
Credits	5
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

Qualification Pack

ELE/N3166: Installation and Repair of Water Purifier

Description

This unit is about performing installation and repairing of the water purifier as per the specifications of the manufacturer and consultation with the customer addressing his/her needs

Scope

The scope covers the following :

- Prepare for installation and repairing of water purifier
- Install water purifier
- Carryout troubleshooting and repairing of the water purifier
- Carryout post installation and repairing activities

Elements and Performance Criteria

Prepare for installation and repairing of water purifier

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

- PC1.** obtain the information and details of the customer for installation and repairing work
- PC2.** collect the necessary tools and equipment required for installation and repairing work
- PC3.** check the functionality of tools and equipment before use

Install water purifier

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

- PC4.** use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards
- PC5.** follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments
- PC6.** remove the water purifier packaging and check the product specifications with the billing invoice as per the instructions in manufacturer manual and SOP
- PC7.** check that all supporting accessories purchased are there in the pack
- PC8.** identify the place to fix the water purifier as per the need of customer
- PC9.** check for the availability of power outlet, surface level, water supply etc. needed for installing the water purifier as per the instructions in manufacturer manual and SOP
- PC10.** fix the wall mounting bracket and its accessories on the wall as per the instructions in manufacturer manual and SOP
- PC11.** fix the water purifier properly on the mounting bracket as per the instructions in manufacturer manual and SOP
- PC12.** connect the water hose and drain pipe with the water purifier and water supply tap as per the instructions in manufacturer manual and SOP
- PC13.** plug the power cord in the power outlet, start the water purifier and open the water supply valve
- PC14.** check the pipe and hose connection for water leaks

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- PC15.** fill the purifier tank and discharge some water for the first time
- PC16.** set the water purification setting as per the running water quality and manufacturer instructions
- PC17.** demonstrate the features, functioning and use of control panel of water purifier to the customer as per the instructions in manufacturer manual and SOP
- PC18.** guide the customer about day-to-day care activities and precautions while using the water purifier as mentioned in product manual

Carryout troubleshooting and repairing of water purifier

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

- PC19.** enquire about the problems/unusual conditions noticed on the equipment from the customer
- PC20.** check the water purifier for any servicing requirements and clean its filter, drain and water hose etc. as per the SOP
- PC21.** conduct the physical inspection and check the water purifier for diagnosing the fault
- PC22.** unplug the unit, carry out basic tests as per the instructions in manufacturer manual and SOP
- PC23.** check the filter for any cleaning or replacement requirements
- PC24.** clean or change the filter as per the requirement
- PC25.** Inspect major components and power supply to reach to the faulty component to be repaired or replaced
- PC26.** dismantle the component for carrying out repair or replacement as per the instructions in manufacturer manual and SOP
- PC27.** remove the faulty component and replace it onsite if possible or send the report to service center for replacement
- PC28.** replace the component in second visit to the site
- PC29.** install and connect it to power supply for checking the working
- PC30.** check all the modules working as per specifications
- PC31.** If the problem cannot be serviced onsite, report and then sent the unit to service center

Carryout post installation and repairing activities

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

- PC32.** clear up the packaging material waste and dispose as per company's norms
- PC33.** collect the payment if the unit is not in warranty and complete the documentation
- PC34.** fill the installation or service report and take acknowledgment from the customer
- PC35.** document the work completed for future records

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant legislation, standards, policies, and procedures followed in the organization
- KU2.** health and safety requirements applicable in the workplace
- KU3.** various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.
- KU4.** methods of accident prevention

Qualification Pack

- KU5.** importance of using protective clothing/equipment while working
- KU6.** general principles for identifying and controlling health and safety risks
- KU7.** main hazards and preventive as well as control measures while working with different types of equipment
- KU8.** importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control
- KU9.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment
- KU10.** safe working practices while working at various hazardous sites
- KU11.** health effects associated with exposure to noise and vibration and the appropriate control measures
- KU12.** fundamentals of electricity such as ohms law, difference between ac and dc
- KU13.** basic electronics (knowledge of components such as diode, transformer, LED, photo transistor, capacitor, resistor, inductor, thermistor, ICs)
- KU14.** site installation requirements (structural requirements, tools etc.)
- KU15.** different features and functionalities of various water purifier models
- KU16.** procedure of installing the water purifier
- KU17.** functioning of the water purifier and its various modules
- KU18.** functioning of various parts of the water purifier
- KU19.** troubleshooting and repairing activities for water purifier
- KU20.** reports and documents need to fill and maintain related to installation and repairing work

Generic Skills (GS)

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

- GS1.** note the information related to work and processes
- GS2.** write reports and observations related to work in English/regional language
- GS3.** read and interpret and process flowchart for all operations
- GS4.** read manuals and operation documents to understand the Equipment used into operation
- GS5.** discuss task lists, schedules and activities with the seniors and team members
- GS6.** follow organization rule-based decision making process
- GS7.** take decisions with systematic course of actions and/or response
- GS8.** plan and organize tasks to meet deadlines
- GS9.** find ways of modifying difficult operating stages to make it operation friendly
- GS10.** apply domain information to set and define operation parameters that ensures economy and quality of the product
- GS11.** analyze the complexity of work to determine if it can be successfully carried out or needs to be referred to a superior/specialist
- GS12.** recognize a workplace problem and take suitable action to resolve it

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation and repairing of water purifier</i>	4	3	-	-
PC1. obtain the information and details of the customer for installation and repairing work	1	-	-	-
PC2. collect the necessary tools and equipment required for installation and repairing work	2	1	-	-
PC3. check the functionality of tools and equipment before use	1	2	-	-
<i>Install water purifier</i>	17	29	-	-
PC4. use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards	1	1	-	-
PC5. follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments	-	1	-	-
PC6. remove the water purifier packaging and check the product specifications with the billing invoice as per the instructions in manufacturer manual and SOP	1	1	-	-
PC7. check that all supporting accessories purchased are there in the pack	1	-	-	-
PC8. identify the place to fix the water purifier as per the need of customer	1	2	-	-
PC9. check for the availability of power outlet, surface level, water supply etc. needed for installing the water purifier as per the instructions in manufacturer manual and SOP	1	2	-	-
PC10. fix the wall mounting bracket and its accessories on the wall as per the instructions in manufacturer manual and SOP	1	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. fix the water purifier properly on the mounting bracket as per the instructions in manufacturer manual and SOP	1	3	-	-
PC12. connect the water hose and drain pipe with the water purifier and water supply tap as per the instructions in manufacturer manual and SOP	2	4	-	-
PC13. plug the power cord in the power outlet, start the water purifier and open the water supply valve	2	4	-	-
PC14. check the pipe and hose connection for water leaks	1	2	-	-
PC15. fill the purifier tank and discharge some water for the first time	1	1	-	-
PC16. set the water purification setting as per the running water quality and manufacturer instructions	2	2	-	-
PC17. demonstrate the features, functioning and use of control panel of water purifier to the customer as per the instructions in manufacturer manual and SOP	1	2	-	-
PC18. guide the customer about day-to-day care activities and precautions while using the water purifier as mentioned in product manual	1	1	-	-
<i>Carryout troubleshooting and repairing of water purifier</i>	16	23	-	-
PC19. enquire about the problems/unusual conditions noticed on the equipment from the customer	1	1	-	-
PC20. check the water purifier for any servicing requirements and clean its filter, drain and water hose etc. as per the SOP	2	3	-	-
PC21. conduct the physical inspection and check the water purifier for diagnosing the fault	2	4	-	-
PC22. unplug the unit, carry out basic tests as per the instructions in manufacturer manual and SOP	2	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. check the filter for any cleaning or replacement requirements	1	1	-	-
PC24. clean or change the filter as per the requirement	1	2	-	-
PC25. Inspect major components and power supply to reach to the faulty component to be repaired or replaced	1	2	-	-
PC26. dismantle the component for carrying out repair or replacement as per the instructions in manufacturer manual and SOP	1	2	-	-
PC27. remove the faulty component and replace it onsite if possible or send the report to service center for replacement	1	2	-	-
PC28. replace the component in second visit to the site	1	1	-	-
PC29. install and connect it to power supply for checking the working	1	1	-	-
PC30. check all the modules working as per specifications	1	1	-	-
PC31. If the problem cannot be serviced onsite, report and then sent the unit to service center	1	-	-	-
<i>Carryout post installation and repairing activities</i>	3	5	-	-
PC32. clear up the packaging material waste and dispose as per company's norms	1	1	-	-
PC33. collect the payment if the unit is not in warranty and complete the documentation	1	1	-	-
PC34. fill the installation or service report and take acknowledgment from the customer	1	2	-	-
PC35. document the work completed for future records	-	1	-	-
NOS Total	40	60	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3166
NOS Name	Installation and Repair of Water Purifier
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
NSQF Level	4
Credits	4
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

Qualification Pack

ELE/N3167: Installation and repair of Microwave

Description

This unit is about performing installation and repairing of the microwave as per the specifications of the manufacturer and consultation with the customer addressing his/her needs

Scope

The scope covers the following :

- Prepare for installation and repairing of microwave
- Install microwave
- Carryout troubleshooting and repairing of the microwave
- Carryout post installation and repairing activities

Elements and Performance Criteria

Prepare for installation and repairing of microwave

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

- PC1.** obtain the information and details of the customer for installation and repairing work
- PC2.** collect the necessary tools and equipment required for installation and repairing work
- PC3.** check the functionality of tools and equipment before use

Install microwave

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

- PC4.** use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards
- PC5.** follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments
- PC6.** remove the microwave packaging and check the product specifications with the billing invoice as per the instructions in manufacturer manual and SOP
- PC7.** check that all supporting accessories purchased are there in the pack
- PC8.** identify the space to place the microwave as per the need of customer
- PC9.** check for the availability of power outlet surface level, ventilation space from wall and top etc. needed for placing the microwave as per the instructions in manufacturer manual and SOP
- PC10.** place the microwave on a flat level surface properly and fix the rotating ring and glass tray inside the oven as per the instructions in manufacturer manual and SOP
- PC11.** plug the power cord in the power outlet and start the microwave
- PC12.** demonstrate the various cooking functions and safety features of microwave to the customer as per the instructions in manufacturer manual and SOP
- PC13.** guide the customer about day-to-day care activities and precautions while using the microwave as mentioned in product manual

Carryout troubleshooting and repairing of microwave

Qualification Pack

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

- PC14.** enquire about the problems/unusual conditions noticed on the equipment from the customer
- PC15.** conduct the physical inspection and check the microwave for diagnosing the fault
- PC16.** •
 - unplug the unit, carry out basic tests as per the instructions in manufacturer manual and SOP
- PC17.** inspect major components and power supply to reach to the faulty component to be repaired or replaced
- PC18.** dismantle the component for carrying out repair or replacement as per the instructions in manufacturer manual and SOP
- PC19.** remove the faulty component and send the report to service center for replacement
- PC20.** replace the component in second visit to the site
- PC21.** install and connect it to power supply for checking the working
- PC22.** check all the modules working as per specifications
- PC23.** If the problem cannot be serviced onsite, report and then sent the unit to service center

Carryout post installation and repairing activities

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

- PC24.** clear up the packaging material waste and dispose as per company's norms
- PC25.** collect the payment if the unit is not in warranty and complete the documentation
- PC26.** fill the installation or service report and take acknowledgment from the customer
- PC27.** document the work completed for future records

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant legislation, standards, policies, and procedures followed in the organization
- KU2.** health and safety requirements applicable in the workplace
- KU3.** various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.
- KU4.** methods of accident prevention
- KU5.** importance of using protective clothing/equipment while working
- KU6.** general principles for identifying and controlling health and safety risks
- KU7.** main hazards and preventive as well as control measures while working with different types of equipment
- KU8.** importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control
- KU9.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment
- KU10.** safe working practices while working at various hazardous sites
- KU11.** health effects associated with exposure to noise and vibration and the appropriate control measures
- KU12.** fundamentals of electricity such as ohms law, difference between ac and dc

Qualification Pack

- KU13.** basic electronics (knowledge of components such as diode, transformer, LED, photo transistor, capacitor, resistor, inductor, thermistor, ICs)
- KU14.** site installation requirements (structural requirements, tools etc.)
- KU15.** different features and functionalities of various microwave models
- KU16.** procedure of installing the microwave
- KU17.** functioning of the microwave and its various modules
- KU18.** functioning of various parts of the microwave
- KU19.** troubleshooting and repairing activities for microwave
- KU20.** reports and documents need to fill and maintain related to installation and repairing work

Generic Skills (GS)

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

- GS1.** note the information related to work and processes
- GS2.** write reports and observations related to work in English/regional language
- GS3.** read and interpret and process flowchart for all operations
- GS4.** read manuals and operation documents to understand the Equipment used into operation
- GS5.** discuss task lists, schedules and activities with the seniors and team members
- GS6.** follow organization rule-based decision making process
- GS7.** take decisions with systematic course of actions and/or response
- GS8.** plan and organize tasks to meet deadlines
- GS9.** find ways of modifying difficult operating stages to make it operation friendly
- GS10.** apply domain information to set and define operation parameters that ensures economy and quality of the product
- GS11.** analyze the complexity of work to determine if it can be successfully carried out or needs to be referred to a superior/specialist
- GS12.** recognize a workplace problem and take suitable action to resolve it

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation and repairing of microwave</i>	4	3	-	-
PC1. obtain the information and details of the customer for installation and repairing work	1	-	-	-
PC2. collect the necessary tools and equipment required for installation and repairing work	2	1	-	-
PC3. check the functionality of tools and equipment before use	1	2	-	-
<i>Install microwave</i>	17	24	-	-
PC4. use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards	1	1	-	-
PC5. follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments	-	1	-	-
PC6. remove the microwave packaging and check the product specifications with the billing invoice as per the instructions in manufacturer manual and SOP	2	1	-	-
PC7. check that all supporting accessories purchased are there in the pack	2	-	-	-
PC8. identify the space to place the microwave as per the need of customer	1	2	-	-
PC9. check for the availability of power outlet surface level, ventilation space from wall and top etc. needed for placing the microwave as per the instructions in manufacturer manual and SOP	2	3	-	-
PC10. place the microwave on a flat level surface properly and fix the rotating ring and glass tray inside the oven as per the instructions in manufacturer manual and SOP	3	6	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. plug the power cord in the power outlet and start the microwave	2	4	-	-
PC12. demonstrate the various cooking functions and safety features of microwave to the customer as per the instructions in manufacturer manual and SOP	3	5	-	-
PC13. guide the customer about day-to-day care activities and precautions while using the microwave as mentioned in product manual	1	1	-	-
<i>Carryout troubleshooting and repairing of microwave</i>	16	28	-	-
PC14. enquire about the problems/unusual conditions noticed on the equipment from the customer	1	1	-	-
PC15. conduct the physical inspection and check the microwave for diagnosing the fault	2	5	-	-
PC16. • • unplug the unit, carry out basic tests as per the instructions in manufacturer manual and SOP	3	5	-	-
PC17. inspect major components and power supply to reach to the faulty component to be repaired or replaced	2	4	-	-
PC18. dismantle the component for carrying out repair or replacement as per the instructions in manufacturer manual and SOP	1	2	-	-
PC19. remove the faulty component and send the report to service center for replacement	1	2	-	-
PC20. replace the component in second visit to the site	2	3	-	-
PC21. install and connect it to power supply for checking the working	2	3	-	-
PC22. check all the modules working as per specifications	1	2	-	-
PC23. If the problem cannot be serviced onsite, report and then sent the unit to service center	1	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carryout post installation and repairing activities</i>	3	5	-	-
PC24. clear up the packaging material waste and dispose as per company's norms	1	1	-	-
PC25. collect the payment if the unit is not in warranty and complete the documentation	1	1	-	-
PC26. fill the installation or service report and take acknowledgment from the customer	1	2	-	-
PC27. document the work completed for future records	-	1	-	-
NOS Total	40	60	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3167
NOS Name	Installation and repair of Microwave
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
NSQF Level	4
Credits	4
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

Qualification Pack

ELE/N3168: Installation and Repair of TV

Description

This unit is about performing installation and repairing of the TV as per the specifications of the manufacturer and consultation with the customer addressing his/her needs

Scope

The scope covers the following :

- Prepare for installation and repairing of TV
- Install TV
- Carryout troubleshooting and repairing of the TV
- Carryout post installation and repairing activities

Elements and Performance Criteria

Prepare for installation and repairing of TV

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

- PC1.** obtain the information and details of the customer for installation and repairing work
- PC2.** collect the necessary tools and equipment required for installation and repairing work
- PC3.** check the functionality of tools and equipment before use

Install TV

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

- PC4.** use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards
- PC5.** follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments
- PC6.** remove the TV packaging and check the product specifications with the billing invoice as per the instructions in manufacturer manual and SOP
- PC7.** check that all supporting accessories purchased are there in the pack
- PC8.** identify the space to place the TV as per the need of customer
- PC9.** if customer wants to install the TV on a table, place it on the table carefully and plug the power cord in power outlet
- PC10.** if customer wants to install the TV on a wall, then first fix the wall mounting bracket and its accessories on the wall as per the instructions in manufacturer manual and SOP
- PC11.** remove the TV stand, fix the TV on wall mounting bracket properly and plug the power cord in power outlet as per the instructions in manufacturer manual and SOP
- PC12.** connect the TV to a wall antenna socket or a satellite dish socket as per the instructions in manufacturer manual and SOP
- PC13.** insert the batteries in remote, turn on the TV and adjust the MENU settings as per customer requirements and instructions in manufacturer manual

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PC14. demonstrate the functions of TV such as use of USB, HDMI cable, wireless connectivity etc. to the customer

PC15. guide the customer about day-to-day care and precautions while using the TV

Carryout troubleshooting and repairing of TV

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

PC16. enquire about the problems/unusual conditions noticed on the equipment from the customer

PC17. conduct the physical inspection and check the TV for diagnosing the fault

PC18. unplug the unit, carry out basic tests such as power supply inspection, power supply setting, remote control functioning, etc. as per the instructions in manufacturer manual and SOP

PC19. inspect major components and power supply to reach to the faulty component to be repaired or replaced

PC20. dismantle the component for carrying out repair or replacement as per the instructions in manufacturer manual and SOP

PC21. remove the faulty component and send the report to service center for replacement

PC22. replace the component in second visit to the site

PC23. reassemble the TV in complete, install and connect it to power supply for checking the working

PC24. check all the modules working as per specifications

PC25. If the problem cannot be serviced onsite, report and then sent the unit to service center

Carryout post installation and repairing activities

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

PC26. clear up the packaging material waste and dispose as per company's norms

PC27. collect the payment if the unit is not in warranty and complete the documentation

PC28. fill the installation or service report and take acknowledgment from the customer

PC29. document the work completed for future records

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant legislation, standards, policies, and procedures followed in the organization

KU2. health and safety requirements applicable in the workplace

KU3. various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.

KU4. methods of accident prevention

KU5. importance of using protective clothing/equipment while working

KU6. general principles for identifying and controlling health and safety risks

KU7. main hazards and preventive as well as control measures while working with different types of equipment

KU8. importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control

Qualification Pack

- KU9.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment
- KU10.** safe working practices while working at various hazardous sites
- KU11.** health effects associated with exposure to noise and vibration and the appropriate control measures
- KU12.** fundamentals of electricity such as ohms law, difference between ac and dc
- KU13.** basic electronics (knowledge of components such as diode, transformer, LED, photo transistor, capacitor, resistor, inductor, thermistor, ICs)
- KU14.** site installation requirements (structural requirements, tools etc.)
- KU15.** different features and functionalities of various TV models
- KU16.** procedure of installing the TV
- KU17.** functioning of the TV and its various modules
- KU18.** functioning of various parts of the TV
- KU19.** troubleshooting and repairing activities for TV
- KU20.** reports and documents need to fill and maintain related to installation and repairing work

Generic Skills (GS)

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

- GS1.** note the information related to work and processes
- GS2.** write reports and observations related to work in English/regional language
- GS3.** read and interpret and process flowchart for all operations
- GS4.** read manuals and operation documents to understand the Equipment used into operation
- GS5.** discuss task lists, schedules and activities with the seniors and team members
- GS6.** follow organization rule-based decision making process
- GS7.** take decisions with systematic course of actions and/or response
- GS8.** plan and organize tasks to meet deadlines
- GS9.** find ways of modifying difficult operating stages to make it operation friendly
- GS10.** apply domain information to set and define operation parameters that ensures economy and quality of the product
- GS11.** analyze the complexity of work to determine if it can be successfully carried out or needs to be referred to a superior/specialist
- GS12.** recognize a workplace problem and take suitable action to resolve it

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation and repairing of TV</i>	4	3	-	-
PC1. obtain the information and details of the customer for installation and repairing work	1	-	-	-
PC2. collect the necessary tools and equipment required for installation and repairing work	2	1	-	-
PC3. check the functionality of tools and equipment before use	1	2	-	-
<i>Install TV</i>	18	28	-	-
PC4. use appropriate personal protective equipment (PPE) for specific tasks and work conditions, contaminant (concentration w.r.t air) requirements and severity of hazard while conforming to the Indian/International standards	1	1	-	-
PC5. follow standard safety procedures while handling tool, equipment, hazardous substances and while working in hazardous environments	-	1	-	-
PC6. remove the TV packaging and check the product specifications with the billing invoice as per the instructions in manufacturer manual and SOP	2	1	-	-
PC7. check that all supporting accessories purchased are there in the pack	2	-	-	-
PC8. identify the space to place the TV as per the need of customer	1	2	-	-
PC9. if customer wants to install the TV on a table, place it on the table carefully and plug the power cord in power outlet	2	3	-	-
PC10. if customer wants to install the TV on a wall, then first fix the wall mounting bracket and its accessories on the wall as per the instructions in manufacturer manual and SOP	1	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. remove the TV stand, fix the TV on wall mounting bracket properly and plug the power cord in power outlet as per the instructions in manufacturer manual and SOP	3	5	-	-
PC12. connect the TV to a wall antenna socket or a satellite dish socket as per the instructions in manufacturer manual and SOP	2	4	-	-
PC13. insert the batteries in remote, turn on the TV and adjust the MENU settings as per customer requirements and instructions in manufacturer manual	1	3	-	-
PC14. demonstrate the functions of TV such as use of USB, HDMI cable, wireless connectivity etc. to the customer	2	4	-	-
PC15. guide the customer about day-to-day care and precautions while using the TV	1	1	-	-
<i>Carryout troubleshooting and repairing of TV</i>	15	24	-	-
PC16. enquire about the problems/unusual conditions noticed on the equipment from the customer	1	1	-	-
PC17. conduct the physical inspection and check the TV for diagnosing the fault	2	4	-	-
PC18. unplug the unit, carry out basic tests such as power supply inspection, power supply setting, remote control functioning, etc. as per the instructions in manufacturer manual and SOP	3	5	-	-
PC19. inspect major components and power supply to reach to the faulty component to be repaired or replaced	2	3	-	-
PC20. dismantle the component for carrying out repair or replacement as per the instructions in manufacturer manual and SOP	1	2	-	-
PC21. remove the faulty component and send the report to service center for replacement	1	2	-	-
PC22. replace the component in second visit to the site	2	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. reassemble the TV in complete, install and connect it to power supply for checking the working	1	2	-	-
PC24. check all the modules working as per specifications	1	1	-	-
PC25. If the problem cannot be serviced onsite, report and then sent the unit to service center	1	1	-	-
<i>Carryout post installation and repairing activities</i>	3	5	-	-
PC26. clear up the packaging material waste and dispose as per company's norms	1	1	-	-
PC27. collect the payment if the unit is not in warranty and complete the documentation	1	1	-	-
PC28. fill the installation or service report and take acknowledgment from the customer	1	2	-	-
PC29. document the work completed for future records	-	1	-	-
NOS Total	40	60	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3168
NOS Name	Installation and Repair of TV
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
NSQF Level	4
Credits	4
Version	1.0
Last Reviewed Date	NA
Next Review Date	17/11/2025
NSQC Clearance Date	17/11/2022

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

Assessment as per the Guideline

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

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National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	25
Total	20	30	-	-	50	25

Elective: 1 Elective 1

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ELE/N3161.Gas Charging in Air Conditioner and Refrigerator	40	60	0	0	100	15
ELE/N3162.Installation & Repair of Air Conditioner	40	60	0	0	100	15
ELE/N3163.Installation and Repair of Dish Washer	40	60	0	0	100	15
ELE/N3169.Installation and repair of Refrigerator (DIOS)	40	60	0	0	100	15
ELE/N3170.Installation and repair of washing machine	40	60	0	0	100	15
Total	200	300	-	-	500	75

Elective: 2 Elective 2

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ELE/N3164.Installation and repair of OLED/Monitor TV	40	60	0	0	100	15
ELE/N3165.Installation and Repair of Basic Refrigerator and Washing Machine	40	60	0	0	100	15
ELE/N3166.Installation and Repair of Water Purifier	40	60	0	0	100	15



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National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ELE/N3167.Installation and repair of Microwave	40	60	0	0	100	15
ELE/N3168.Installation and Repair of TV	40	60	0	0	100	15
Total	200	300	-	-	500	75



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.