







Model Curriculum

QP Name: Service Technician – Home Appliances

QP Code: ELE/Q3111

QP Version: 3.0

NSQF Level: 4

Model Curriculum Version: 3.0

Electronics Sector Skills Council of India | | 155, 2nd Floor, ESC House, Okhla Industrial Area- Phase 3, New Delhi– 110020







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Training Parameters

Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7421.0701
Minimum Educational Qualification and Experience	8th Grade Pass + NTC (2 years after 8th) + 2 Year NAC/relevant Experience) OR 10th Grade pass + 2 Year NTC/NAC/ relevant experience OR Certificate-NSQF (Level-3 in Maintenance Technician) with 2 Years of relevant Experience OR 12th Class and 18 Years
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	27/01/2022
Next Review Date	27/06/2025
NSQC Approval Date	27/01/2022
QP Version	3.0
Model Curriculum Creation Date	27/01/2022
Model Curriculum Valid Up to Date	27/06/2025
Model Curriculum Version	3.0
Maximum Duration of the Course	600 Hours







Program Overview

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

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills:

- Describe the process of engaging with customer with service.
- Demonstrate the process of installation and repair Appliances.
- Explain the importance of following inclusive practices for all genders and PwD at work.
- Demonstrate various practices to be followed to maintain health and safety at work.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Recommended)	On-the-Job Training Duration (Mandatory)	Total Duration
Bridge Module	06:00	04:00	00:00	00:00	10:00
Module 1: Introduction and orientation to the role of a Service Technician – Home Appliances	06:00	04:00	00:00	00:00	10:00
ELE/N3101: Engage with customer for service	60:00	90:00	00:00	60:00	210:00
Module 2: Process of engaging with customer with service	60:00	90:00	00:00	60:00	210:00
ELE/N3112: Perform installation and repair of refrigerator	60:00	110:00	00:00	90:00	260:00
Module 3: Process of performing installation and repair of refrigerator	60:00	110:00	00:00	90:00	260:00
ELE/N9905 Work effectively at the workplace	15:00	15:00	00:00	00:00	30:00







Module 4: Soft Skills and Work Ethics	15:00	15:00	00:00	00:00	30:00
ELE/N1002 Apply health and safety practices at the workplace	15:00	15:00	00:00	00:00	30:00
Module 5: Basic Health and Safety Practice	15:00	15:00	00:00	00:00	30:00
DGT/VSQ/N0102- Employability Skills (60 Hours)	24:00	36:00	00:00	00:00	60:00
Module 6: Employability Skills (60 Hours)	24:00	36:00	00:00	00:00	60:00
Total Duration	180:00	270:00	00:00	150:00	600:00







Module Details

Module 1: Introduction and orientation to the role of a Service Technician – Home Appliances

Bridge Module

Terminal Outcomes:

• Discuss the job role of a Service Technician — Home Appliances.

Duration: 06:00	Duration: 04:00				
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes				
 Describe the size and scope of the electronics industry and its sub- sectors. 	Overview and Familiarization with the Home Appliances				
 Discuss the role and responsibilities of a Service Technician – Home Appliances. 					
 Describe various employment opportunities for a Service Technician Home Appliances. 					
Classroom Aids					
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop					
Tools, Equipment and Other Requirements					
NA					







Module 2: Process of engaging with customer with service *Mapped to ELE/N3101*

Terminal Outcomes:

- Explain the importance of interacting with customer.
- Explain the need of suggesting possible solutions.

Duration: 60:00	Duration: 90:00			
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes			
 Explain company's policies on code of conduct, organisation's culture, customer care, reporting structure and documentation policy. 	 Demonstrate how to analyse the details of customer complaint registered at customer care or installation schedule. 			
 State company's products and recurring problems reported in consumer appliances. 	 Show how to check about warranty status of appliance and annual maintenance contract. 			
 Explain precautions to be taken while handling field calls and dealing with customers. 				
 Explain the importance of personal grooming with proper etiquettes at the customer's premises. 				
 List basic electrical, mechanical modules of various appliances and electronics involved in the type of appliance. 				
 State models of different appliances, their common and distinguishing features, functionality of different features of appliances and new features. 				
Classroom Aids				
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop				
Tools, Equipment and Other Requirements				

NA





indoor and the outdoor units is more



Module 3: Process of installation and repairing appliances *Mapped to ELE/N3112*

Terminal Outcomes:

- Describe the process of preparing for installation of the appliances.
- Demonstrate the process of installing refrigerator, air conditioner, washing machine, water purifier at customer location.
- Demonstrate the process of diagnosing, repairing and replacing the faulty module of appliances.

Duration: 60:00	Duration: 110:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 Explain the company's policy on product's warranty, sales, installation, after sales support policy and other terms and conditions. Explain different types of refrigerators such as traditional, frost-free, peltier with all features 	 Demonstrate how to provide guidance to the customer for pre-installation requirement as per the appliance w.r.t platform for placing the appliance, plug point, etc. Show how to make measurements at the location identified and drill holes,
 and functionalities of various models. State refrigerator manufacturing capabilities of the organisation, models of the company and their respective features. 	 if required, ensuring no internal wiring damage takes place Show how to remove the packaging from the appliance delivered at the customer location.
 List installation-site requirements such as structural requirements, ventilation, etc. 	 Demonstrate the process of clearing up the packaging material waste and disposing it as per company's norms.
 Explain the refrigeration cycle and functioning of the appliance and its various modules, including various electromechanical parts of the refrigerator. 	 Demonstrate the process of fitting water-disposal beaker, handle, shelves, basket and side buckets. Show how to connect the refrigerator to power supply and set
 Describe the method of refrigeration, its use and functioning of refrigerator sealed system. 	cooling/freezer temperature knobs according to the season so as to demonstrate features/utility.
 Explain types of refrigerants such as R12, R22, R134a, R290, R600a, R410, R32, use of different brazing sticks, types of brazing torches, fluxes and their application. 	 Show how to mount the indoor unit ensuring that the screws are fastened securely. Demonstrate how to connect the indoor and the outdoor units using
 Describe manual-based procedure of installing the refrigerators. 	the field copper pipe of appropriate size.
Describe methods of fixing various accessories, parts that have	Demonstrate how to fill in additional gas if the distance between the independent of the control of the c

accompanied the unit and their







features.

- Explain how to use the appliance and its various features/functionalities after installation.
- Explain the use of test equipment and tools such as multi-meter, oscilloscope etc.
- Explain safety precautions/rules, policies, procedures and quality standards to be followed.
- Explain the fundamentals of electricity such as ohms law, difference between ac and dc, understanding of domestic wiring, understanding of series and parallel connections.
- Explain how to rectify so as to avoid repeat fault in the refrigerator.
- Describe the process of selection of appropriate spares for replacement.
- Explain basic knowledge of components such as diode, transformer, LED, photo transistor, capacitor, thermistor ICs etc.
- Explain components/modules of refrigerators and their prices.
- Describe packaging waste disposal procedures.
- State refrigerator energy ratings such as BEE rating.
- State troubleshooting knowledge with respect to refrigerators.
- Explain various hazards, their causes and prevention/personal safety.
- Explain frequently occurring faults such as noise, water dripping and insufficient cooling, their causes and solutions.
- Describe other products of the company.

than recommended.

- Show how to connect the machine's drain hose with the sewage pipe to ensure proper drainage.
- Demonstrate how to connect the waste water outlet from the washing machine to the waste system such that the dirty water does not get siphoned back into the washing machine.
- Demonstrate the process of operating and checking that there are no leaks and the machine is in a safe and stable condition.
- Show how to mount the filter and ensure that the screws are fastened securely.
- Demonstrate how to drain the inlet line before connecting it to the water purifier and connect the outlet pipe to the drain (if applicable).
- Demonstrate how to diagnose the fault based on customer interaction, usage pattern and initial inspection.
- Show how to unplug the appliance to carry out further inspection.
- Demonstrate the process of performing basic tests such as power supply inspection, volt ampere test and earth test power supply.
- Show how to inspect every module of the unit separately if the fault is not identified through basic tests such as compressor, motors, PCB, condenser optimise the time taken to fix the dysfunctional refrigerator.
- Demonstrate the process of repairing/replacing component at location, if the fault identified is due to damage of components.
- Show how to reassemble the unit to check that all the modules of the unit are working as per specifications.
- Demonstrate functionality of the unit to the customer.
- Show how to fill in customer







acknowledgement form and get it signed by customer, both in case of installation and repair.

- Prepare sample document of the work completed on the company ERP software for tracking.
- Prepare all sample documents related to complaint closure.
- Demonstrate how to escalate customer issues and problems that are unresolved at field level, including queries on non-field service areas.
- Roleplay how to provide training to junior level technicians about installation procedures, diagnosis procedures and customer handling.

Classroom Aids

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

Tools, Equipment and Other Requirements

Different types of Refrigerators, Multi-meter, Pressure Gauge, Electrical Drill, Clamp Meter, Tube Cutter, Tube Bender, Vacuum Pump, Weighing Scale, Gas Cylinder, Temperature meter, Spanner, Screw Driver set







Module 4: Soft Skills and Work Ethics *Mapped to ELE/N9905*

Terminal Outcomes:

- Work effectively at the workplace.
- Implement the practices related to gender and PwD sensitization.

Duration: 15:00	Duration: 15:00		
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes		
 State the importance of work ethics and workplace etiquette 	 Develop a sample plan to achieve organisational goals and targets. 		
 State the importance of effective communication and interpersonal skills. 	 Create a sample feedback form to obtain feedback from customers, colleagues etc. 		
 Explain ways to maintain discipline at the workplace. 	Roleplay to demonstrate the use of professional language and behaviour		
Discuss the common reasons for interpersonal conflict and ways of the common reasons for interpersonal conflict and ways of the common reasons.	that is respectful of PwD and all genders.		
 managing them effectively. Discuss the importance of following organisational guidelines for dress code, time schedules, language usage and other behavioural aspects. 	 Apply organisational protocol on data confidentiality and sharing only with the authorised personnel. 		
 Explain the importance of working as per the workflow of the organisation to receive instructions and report problems. 			
 Explain the importance of conveying information/instructions as per defined protocols to the authorised persons/team members. 			
 Explain the common workplace guidelines and legal requirements on non-disclosure and confidentiality of business-sensitive information. 			
 Describe the process of reporting grievances and unethical conduct such as data breaches, sexual harassment at the workplace, etc. 			
 Explain the concept and importance of gender sensitivity and equality. 			
 Discuss ways to create sensitivity for different genders and Persons with Disabilities (PwD). 			







 Discuss ways of dealing with heightened emotions of self and others.

Classroom Aids

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

Tools, Equipment and Other Requirements

Sample Of Escalation Matrix, Organization Structure.







Module 5: Basic Health and Safety Practice *Mapped to ELE/N1002*

Terminal Outcomes:

• Apply health and safety practices at the workplace.

Duration: 15:00	Duration: 15:00		
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes		
 Discuss job-site hazards, risks and accidents. Explain the organizational safety procedures for maintaining electrical safety, handling tools and hazardous materials. Elaborate on electronic waste 	 Demonstrate the use of protective equipment suitable as per tasks and work conditions. Prepare a report to inform the relevant authorities about any abnormal situation/behaviour of any equipment/system. 		
disposal procedures. • Describe the process of disposal of hazardous waste	Administer first aid in case of a minor accident. Demonstrate, the steps to free a		
 List the name and location of concerned people, documents and equipment for maintaining health and safety in the workplace. 	 Demonstrate the steps to free a person from electrocution safely. Administer Cardiopulmonary Resuscitation (CPR). Demonstrate the application of 		
 Describe how to interpret warning signs while accessing sensitive work areas. Explain the importance of good 	defined emergency procedures such as raising alarm, safe/efficient, evacuation, moving injured people, etc.		
 Describe the importance of maintaining appropriate postures while lifting heavy objects. 	 Prepare a sample incident report. Use a fire extinguisher in case of a fire incident. 		
 List the types of fire and fire extinguishers. 	 Demonstrate the correct method of lifting and handling heavy objects. 		
 Explain the importance of efficient utilisation of water, electricity and other resources. 			
 List the common sources of pollution and ways to minimize it. 			
 Describe the concept of waste management and methods of disposing hazardous waste. 			
 Explain various warning and safety signs. 			
 Describe different ways of preventing accidents at the workplace. 			







Classroom Aids

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

Tools, Equipment and Other Requirements

Personal Protection Equipment: Safety Glasses, Head Protection, Rubber Gloves, Safety Footwear, Warning Signs and Tapes, Fire Extinguisher, First Aid Kit, Fire Extinguishers and Warning Signs.







Module 6: Employability Skills (60 Hours) *Mapped to DGT/VSQ/N0102*

Terminal Outcomes:

- Discuss about Employability Skills in meeting the job requirements
- Describe opportunities as an entrepreneur.
- Describe ways of preparing for apprenticeship & Jobs appropriately.

Duration: 24:00	Duration: 36:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 Explain constitutional values, civic rights, responsibility towards society to become a responsible citizen 	 List different learning and employability related GOI and private portals and their usage
 Discuss 21st century skills 	Show how to practice different
 Explain use of basic English phrases and sentences. 	environmentally sustainable practices.
Demonstrate how to communicate in a well-behaved manner	 Exhibit 21st century skills like Self- Awareness, Behavior Skills, time management, etc.
 Demonstrate how to work with others 	 Show how to use basic English sentences for everyday conversation in different
 Demonstrate how to operate digital devices 	 contexts, in person and over the telephone Demonstrate how to communicate in a well mannered way with others.
 Discuss the significance of Internet and Computer/ Laptops 	Demonstrate how to communicate effectively using verbal and
 Discuss the need for identifying business opportunities 	nonverbal communication etiquette Utilize virtual collaboration tools to work
 Discuss about types of customers. 	effectively
Discuss on creation of biodata	 Demonstrate how to maintain hygiene and dressing appropriately.
 Discuss about apprenticeship and opportunities related to it. 	Perform a mock interview

Classroom Aids

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

Tools, Equipment and Other Requirements

Computer, UPS, Scanner, Computer Tables, LCD Projector, Computer Chairs, White Board

OR

Computer Lab







Module 7: On-the-Job Training

Mapped to Service Technician – Home Appliances

Mandatory Duration: 150:00 Recommended Duration: 00:00

Location: On Site

Terminal Outcomes

- 1. Check the warranty status of the appliance and annual maintenance contract.
- 2. Clearing up the packaging material waste and disposing it as per company's norms.
- 3. Fitting water-disposal beaker, handle, shelves, basket and side buckets.
- 4. Diagnose the fault.
- 5. Perform basic tests such as power supply inspection, volt ampere test and earth test power supply.
- 6. Reassemble the unit to check that all the modules of the unit are working as per specifications.
- 7. Inspect the tools and fitments required for the installation are available.
- 8. Align the air conditioner as per the instructions manual and make necessary power supply connections.
- 9. Prepare sample documents for recording installation/repair of air conditioner and update the company ERP software for tracking/future references.
- 10. Communicating effectively at the workplace.
- 11. Applying health and safety practices at the workplace.







Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational	Specialization	Relevant Industry Experience		Traini Experi	•	Remarks
Qualification		Years	Specialization	Years	Specialization	
Diploma/ ITI/ Certified in relevant CITS Trade	Electrical/ Electronics/ Mechanical	1	After Sales Services	1	Electronics	

Trainer Certification			
Domain Certification Platform Certification			
"Service Technician – Home Appliances", "ELE/Q3111, v3.0", Minimum accepted score is 80%	Recommended that the Trainer is certified for the Service Technician – Home Appliances "Trainer (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2601, V2.0", with minimum score of 80%		







Assessor Requirements

Assessor Prerequisites								
Minimum Educational	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks		
Qualification		Years	Specialization	Years	Specialization			
Diploma/ ITI/ Certified in relevant CITS Trade	Electrical/ Electronics/ Mechanical	2	After Sales Services	1	Electronics			

Assessor Certification					
Domain Certification	Platform Certification				
"Service Technician – Home Appliances", "ELE/Q3111, v3.0", Minimum accepted score is 80%	Recommended that the Assessor is certified for the Service Technician – Home Appliances "Assessor (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2701, V2.0", with minimum score of 80%				







Assessment Strategy

- 1. Assessment System Overview:
 - Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
 - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
 - The assessment agency deploys the ToA certified Assessor for executing the assessment
 - SSC monitors the assessment process & records
- 2. Testing Environment

To ensure a conducive environment for conducting a test, the trainer will:

- Confirm that the centre is available at the same address as mentioned on SDMS or SIP
- Check the duration of the training.
- Check the Assessment Start and End time to be 10 a.m. and 5 p.m. respectively
- Ensure there are 2 Assessors if the batch size is more than 30.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
- Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
- Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
- Check the availability of the Lab Equipment for the particular Job Role.
- 3. Assessment Quality Assurance levels / Framework:
 - Question papers created by the Subject Matter Experts (SME)
 - Question papers created by the SME verified by the other subject Matter Experts
 - Questions are mapped with NOS and PC
 - Question papers are prepared considering that level 1 to 3 are for the unskilled & semiskilled individuals, and level 4 and above are for the skilled, supervisor & higher management
 - The assessor must be ToA certified and the trainer must be ToT Certified
 - The assessment agency must follow the assessment guidelines to conduct the assessment
- 4. Types of evidence or evidence-gathering protocol:
 - Time-stamped & geotagged reporting of the assessor from assessment location
 - Centre photographs with signboards and scheme-specific branding
 - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
 - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos
- 5. Method of verification or validation:

To verify the details submitted by the training centre, the assessor will undertake:

- A surprise visit to the assessment location
- A random audit of the batch
- A random audit of any candidate
- 6. Method for assessment documentation, archiving, and access

To protect the assessment papers and information, the assessor will ensure:

Hard copies of the documents are stored







- Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
- Soft copies of the documents & photographs of the assessment are stored on the Hard drive







References

Glossary

Term	Description
Declarative knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training .
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.







Acronyms and Abbreviations

Term	Description
ISO	International Organization for Standardization
NCO	National Occupational Standards
NOS	National Skills Qualification Committee
NSQF	National Skills Qualification Framework
OJT	On-the-Job Training
OMR	Optical Mark Recognition
PC	Performance Criteria
PwD	Persons with Disabilities
QP	Qualification Pack
SDMS	Skill Development & Management System
SIP	Skill India Portal
SME	Small and Medium Enterprises
SOP	Standard Operating Procedure
SSC	Sector Skill Council
тс	Trainer Certificate
ТоА	Training of Assessors
ТоТ	Training of Trainers
ТР	Training Provider