



Service Technician - Home Appliances

QP Code: ELE/Q3111

Version: 2.0

NSQF Level: 4

Electronics Sector Skills Council of India || 155, 2nd Floor, ESC House Okhla Industrial Area-Phase 3
New Delhi- 110020 || email:sneh@essc-india.org

Contents

ELE/Q3111: Service Technician - Home Appliances	3
<i>Brief Job Description</i>	3
Applicable National Occupational Standards (NOS)	3
<i>Compulsory NOS</i>	3
<i>Qualification Pack (QP) Parameters</i>	3
ELE/N3101: Engage with customer for service	5
ELE/N3112: Install and repair appliances	9
ELE/N9905: Work effectively at the workplace	18
ELE/N1002: Apply health and safety practices at the workplace	26
Assessment Guidelines and Weightage	33
<i>Assessment Guidelines</i>	33
<i>Assessment Weightage</i>	34
Acronyms	35
Glossary	36

ELE/Q3111: Service Technician - Home Appliances

Brief Job Description

A Service Technician - Home Appliances is responsible to interact with customers to Install the appliance or diagnose the problem to assess possible causes of malfunction. Once the problem and causes have been identified, the individual rectifies the problems or replaces faulty modules/failed parts or recommends factory repairs.

Personal Attributes

The individual must be willing to work in the field and travel through the day from one customers premise to another. The individual must also possess important attributes such as punctuality, amenable behaviour, patience, good interpersonal relationship building, trustworthiness, integrity, and critical thinking.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [ELE/N3101: Engage with customer for service](#)
2. [ELE/N3112: Install and repair appliances](#)
3. [ELE/N9905: Work effectively at the workplace](#)
4. [ELE/N1002: Apply health and safety practices at the workplace](#)

Qualification Pack (QP) Parameters

Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
Country	India
NSQF Level	4
Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL

Minimum Educational Qualification & Experience	8th Class (+ ITI (2 years after 8th) with 2 years of relevant Experience) OR 10th Class (with 2 years of relevant Experience OR I.T.I (after 10th) OR 12th Class) OR Certificate (NSQF Level-3 in Safety Testing Technician RACWO with 2 years of relevant Experience)
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	27/01/2022
Next Review Date	02/06/2025
Deactivation Date	31/07/2024
NSQC Approval Date	27/01/2022
Version	2.0
Reference code on NQR	2022/EHW/ESSCI/05127
NQR Version	1.0

Remarks:

NA

ELE/N3101: Engage with customer for service

Description

This NOS unit is about interacting with customer to understand their requirement with respect to problem in the appliance

Scope

The scope covers the following :

- Interact with customer
- Suggest possible solutions

Elements and Performance Criteria

Interacting with customer

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

- PC1.** analyse the details of customer complaint registered at customer care or installation schedule
- PC2.** connect with the customer to confirm problem telephonically and fix time for visit
- PC3.** collect appropriate tools, parts, relevant reference sheets, manuals and documents
- PC4.** visit the customer premises as per the scheduled date and time for service as per the requirement
- PC5.** check about warranty status of appliance and annual maintenance contract
- PC6.** gather detailed information pertaining to age of appliance, status of upkeep, symptoms and history of problems in the appliance
- PC7.** provide information to the customer about the warranty and problem in detail along with the precautions to be taken in order to avoid recurrence of problem

Suggest possible solutions

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

- PC8.** suggest possible solutions with the time required, costs involved and methodology for servicing
- PC9.** seek customer's approval on further action

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** company's policies on code of conduct, organisation's culture, customer care, reporting structure and documentation policy
- KU2.** company's products and recurring problems reported in consumer appliances
- KU3.** precautions to be taken while handling field calls and dealing with customers
- KU4.** importance of personal grooming with proper etiquettes at the customer's premises
- KU5.** basic electrical, mechanical modules of various appliances and electronics involved in the type of appliance

KU6. models of different appliances, their common and distinguishing features, functionality of different features of appliances and new features

Generic Skills (GS)

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

- GS1.** complete required documentation
- GS2.** seek inputs and guidance from the supervisor
- GS3.** read and comprehend documents
- GS4.** communicate in local/regional/English language
- GS5.** comply with applicable standard operating procedures
- GS6.** communicate with all stakeholders to be able to work efficiently
- GS7.** interact with others in a polite and courteous manner
- GS8.** maintain proper etiquette while dealing with the customer

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Interacting with customer</i>	32	41	-	8
PC1. analyse the details of customer complaint registered at customer care or installation schedule	5	6	-	1
PC2. connect with the customer to confirm problem telephonically and fix time for visit	4	6	-	1
PC3. collect appropriate tools, parts, relevant reference sheets, manuals and documents	4	6	-	2
PC4. visit the customer premises as per the scheduled date and time for service as per the requirement	4	6	-	1
PC5. check about warranty status of appliance and annual maintenance contract	4	6	-	1
PC6. gather detailed information pertaining to age of appliance, status of upkeep, symptoms and history of problems in the appliance	5	6	-	1
PC7. provide information to the customer about the warranty and problem in detail along with the precautions to be taken in order to avoid recurrence of problem	6	5	-	1
<i>Suggest possible solutions</i>	8	9	-	2
PC8. suggest possible solutions with the time required, costs involved and methodology for servicing	4	5	-	1
PC9. seek customer's approval on further action	4	4	-	1
NOS Total	40	50	-	10

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3101
NOS Name	Engage with customer for service
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	AFTER SALES SERVICE
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

ELE/N3112: Install and repair appliances

Description

This NOS unit is about installation of newly purchased appliance (refrigerator/airconditioner/washing machine/water purifier) at customer location and repair in case of any dysfunction.

Scope

The scope covers the following :

- Prepare for installation of the appliance
- Install refrigerator at customer location
- Install air conditioner at customer location
- Install washing machine at customer location
- Install water purifier at customer location
- Diagnose, repair and replace the faulty module of appliance

Elements and Performance Criteria

Prepare for installation of the appliance

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

- PC1.** visit customer location as scheduled
- PC2.** provide guidance to the customer for pre-installation requirement as per the appliance w.r.t structure, plug point, drainage, plumbing etc.
- PC3.** make measurements at the location identified and drill holes, if required, ensuring no internal wiring damage takes place
- PC4.** remove the packaging from the appliance delivered at the customer location
- PC5.** verify that the product matches the customer's order with all supporting accessories
- PC6.** check the availability of all tools and fitments for the installation
- PC7.** clear up the packaging material waste and dispose as per company's norms
- PC8.** seek customer's input on placing/positioning the appliance near a plug point, in obstruction-free area, while maintaining the required distance from wall and floor

Install refrigerator at customer location

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

- PC9.** perform steps to fit water-disposal beaker, handle, shelves, basket and side buckets
- PC10.** connect the refrigerator to power supply and set cooling/freezer temperature knobs according to the season so as to demonstrate features/utility
- PC11.** inform the customer about the precautions to be taken while using the refrigerator and heating of outside walls of the refrigerator
- PC12.** verify thermostat settings are appropriate as per the requirement

Install air conditioner at customer location

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

- PC13.** provide information to the customer about requirement of concealed drainage and electric conduits

- PC14.** mount the indoor unit ensuring that the screws are fastened securely
- PC15.** place the outdoor unit at a suitable location and attach it firmly to wall/floor
- PC16.** connect the indoor and the outdoor units using the field copper pipe of appropriate size
- PC17.** fill in additional gas if the distance between the indoor and the outdoor units is more than recommended
- PC18.** perform steps to make necessary power supply connections and align the air conditioner as per the instructions manual

Install washing machine at customer location

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

- PC19.** remove all transport pins or anything lying in the drum of the washing machine before starting the machine
- PC20.** check the necessary plumbing installations required for water inlet and outlet
- PC21.** connect the machine's drain hose with the sewage pipe to ensure proper drainage
- PC22.** identify the water inlet valve in the household plumbing
- PC23.** ensure that the valve is turned off while connecting the PVC hose water inlet of the washing machine to the valve
- PC24.** 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
- PC25.** perform steps to make inlet, outlet and power supply connections securely using the correct tools and equipment for installation
- PC26.** operate and check that there are no leaks and the machine is in a safe and stable condition

Install water purifier at customer location

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

- PC27.** inform the customer about requirement of adequate water pressure at the inlet source
- PC28.** mount the filter and ensure that the screws are fastened securely
- PC29.** drain the inlet line before connecting it to the water purifier and connect the outlet pipe to the drain (if applicable)
- PC30.** ensure that the filter is aligned as per instructions in the installation manual
- PC31.** run the purifier to ensure there are no leaks and demonstrate the features/utility to the customer
- PC32.** place a piece of cloth or towel under the unit in order to avoid any water spills on the floor
- PC33.** explain maintenance procedures to be followed while using the water purifier

Diagnose, repair and replace the faulty module of appliance

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

- PC34.** diagnose the fault based on customer interaction, usage pattern and initial inspection
- PC35.** unplug the appliance to carry out further inspection
- PC36.**
 - "perform basic tests such as power supply inspection, volt ampere test and earth test power supply
 - "
- PC37.** inspect every module of the unit separately if the fault is not identified through basic tests
- PC38.** send it to factory for in-depth diagnosis if problem does not get identified at site
- PC39.** repair/replace component at location, if the fault identified is due to damage of components
- PC40.** schedule next appointment if the part can't be replaced on site

- PC41.** reassemble the unit to check that all the modules of the unit are working as per specifications
- PC42.** demonstrate functionality of the unit to the customer
- PC43.** provide information to the customer about cleaning procedures and precautions to be taken in order to avoid recurrence of problem
- PC44.** complete all documentation procedures for complaint closure
- PC45.** collect necessary payments from the customer

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** company's policy on product's warranty, sales, installation, after sales support policy and other terms and conditions
- KU2.** installation site requirements (structural requirements, ventilation, etc.) with all safety precautions to be taken while installing
- KU3.** different types of refrigerators such as traditional, frost-free, peltier with all features and functionalities of various models
- KU4.** different types of air conditioners such as window, split, cassette etc. and different features and functionalities of various models
- KU5.** different types of washing machines such as front load and top load their features and functionalities
- KU6.** different models of microwave ovens and their features and functionalities
- KU7.** different types of water purifiers manufactured by the company
- KU8.** manual-based procedure of installing the refrigerators/air conditioner/washing machine/water purifier
- KU9.** methods of fixing various accessories, parts that have accompanied the unit and their features
- KU10.** how to use the appliance and its various features/functionalities after installation
- KU11.** use of test equipment and tools such as multi-meter, oscilloscope etc.
- KU12.** safety precautions/rules, policies, procedures and quality standards to be followed
- KU13.** troubleshooting knowledge with respect to refrigerators/air conditioner/washing machine/water purifier/microwave
- KU14.** fundamentals of electricity such as ohms law, difference between ac and dc, understanding of domestic wiring etc.
- KU15.** basic knowledge of components such as diode, transformer, LED, photo transistor, capacitor, thermistor lcs etc.
- KU16.** components/modules of refrigerators/air conditioner/washing machine/water purifier/microwave
- KU17.** method of refrigeration, its use and functioning of refrigerator sealed system
- KU18.** basics of 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
- KU19.** different cycles in the machine running process and possible symptoms of faults
- KU20.** water flow diagram and electrical circuit diagram of the water purifier

- KU21.** water purification process and different layers of filter present within the unit such as sediment filter, carbon block filter etc.
- KU22.** parameters such as production rate, water chemistry, drain/rate, input water pressure/temperature etc.
- KU23.** chemical and other properties of various filters of the water purifier
- KU24.** different technologies in water purification (such as reverse osmosis, de ionisation etc.) and different features, functionalities of various models
- KU25.** energy ratings such as BEE rating and concepts of e waste
- KU26.** hazards, their causes and prevention/personal safety

Generic Skills (GS)

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

- GS1.** complete forms and other documentation
- GS2.** read and comprehend text material
- GS3.** communicate in local/regional/English language
- GS4.** interact with others in a polite and courteous manner
- GS5.** comply with applicable standard operating procedures
- GS6.** communicate with all stakeholders to be able to work efficiently
- GS7.** seek inputs and guidance from the supervisor
- GS8.** maintain proper etiquette while dealing with the customer
- GS9.** interpret information clearly
- GS10.** improve work processes

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation of the appliance</i>	7	6	-	2
PC1. visit customer location as scheduled	-	-	-	-
PC2. provide guidance to the customer for pre-installation requirement as per the appliance w.r.t structure, plug point, drainage, plumbing etc.	1	1	-	1
PC3. make measurements at the location identified and drill holes, if required, ensuring no internal wiring damage takes place	1	1	-	-
PC4. remove the packaging from the appliance delivered at the customer location	1	1	-	-
PC5. verify that the product matches the customer's order with all supporting accessories	-	1	-	-
PC6. check the availability of all tools and fitments for the installation	1	1	-	-
PC7. clear up the packaging material waste and dispose as per company's norms	1	1	-	-
PC8. seek customer's input on placing/positioning the appliance near a plug point, in obstruction-free area, while maintaining the required distance from wall and floor	2	-	-	1
<i>Install refrigerator at customer location</i>	3	5	-	1
PC9. perform steps to fit water-disposal beaker, handle, shelves, basket and side buckets	1	1	-	-
PC10. connect the refrigerator to power supply and set cooling/freezer temperature knobs according to the season so as to demonstrate features/utility	1	3	-	1
PC11. inform the customer about the precautions to be taken while using the refrigerator and heating of outside walls of the refrigerator	1	-	-	-
PC12. verify thermostat settings are appropriate as per the requirement	-	1	-	-
<i>Install air conditioner at customer location</i>	6	10	-	2

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. provide information to the customer about requirement of concealed drainage and electric conduits	1	-	-	-
PC14. mount the indoor unit ensuring that the screws are fastened securely	1	1	-	-
PC15. place the outdoor unit at a suitable location and attach it firmly to wall/floor	1	1	-	-
PC16. connect the indoor and the outdoor units using the field copper pipe of appropriate size	1	2	-	-
PC17. fill in additional gas if the distance between the indoor and the outdoor units is more than recommended	1	3	-	1
PC18. perform steps to make necessary power supply connections and align the air conditioner as per the instructions manual	1	3	-	1
<i>Install washing machine at customer location</i>	7	8	-	1
PC19. remove all transport pins or anything lying in the drum of the washing machine before starting the machine	1	1	-	-
PC20. check the necessary plumbing installations required for water inlet and outlet	1	-	-	-
PC21. connect the machine's drain hose with the sewage pipe to ensure proper drainage	1	-	-	-
PC22. identify the water inlet valve in the household plumbing	1	1	-	-
PC23. ensure that the valve is turned off while connecting the PVC hose water inlet of the washing machine to the valve	-	1	-	-
PC24. 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	1	1	-	-
PC25. perform steps to make inlet, outlet and power supply connections securely using the correct tools and equipment for installation	1	3	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. operate and check that there are no leaks and the machine is in a safe and stable condition	1	1	-	-
<i>Install water purifier at customer location</i>	6	6	-	1
PC27. inform the customer about requirement of adequate water pressure at the inlet source	1	-	-	-
PC28. mount the filter and ensure that the screws are fastened securely	1	1	-	-
PC29. drain the inlet line before connecting it to the water purifier and connect the outlet pipe to the drain (if applicable)	1	1	-	-
PC30. ensure that the filter is aligned as per instructions in the installation manual	1	-	-	-
PC31. run the purifier to ensure there are no leaks and demonstrate the features/utility to the customer	1	3	-	1
PC32. place a piece of cloth or towel under the unit in order to avoid any water spills on the floor	-	1	-	-
PC33. explain maintenance procedures to be followed while using the water purifier	1	-	-	-
<i>Diagnose, repair and replace the faulty module of appliance</i>	11	15	-	3
PC34. diagnose the fault based on customer interaction, usage pattern and initial inspection	1	1	-	1
PC35. unplug the appliance to carry out further inspection	1	1	-	-
PC36. • "perform basic tests such as power supply inspection, volt ampere test and earth test power supply • "	1	3	-	1
PC37. inspect every module of the unit separately if the fault is not identified through basic tests	1	3	-	1
PC38. send it to factory for in-depth diagnosis if problem does not get identified at site	1	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC39. repair/replace component at location, if the fault identified is due to damage of components	1	1	-	-
PC40. schedule next appointment if the part can't be replaced on site	1	-	-	-
PC41. reassemble the unit to check that all the modules of the unit are working as per specifications	1	2	-	-
PC42. demonstrate functionality of the unit to the customer	-	2	-	-
PC43. provide information to the customer about cleaning procedures and precautions to be taken in order to avoid recurrence of problem	1	-	-	-
PC44. complete all documentation procedures for complaint closure	1	2	-	-
PC45. collect necessary payments from the customer	1	-	-	-
NOS Total	40	50	-	10

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N3112
NOS Name	Install and repair appliances
Sector	Electronics
Sub-Sector	Consumer Electronics & IT Hardware
Occupation	After Sales Service
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	27/01/2022
Next Review Date	27/06/2025
NSQC Clearance Date	27/01/2022

ELE/N9905: Work effectively at the workplace

Description

This unit is about the communicating and managing work effectively at the workplace as well as taking measures to enhance own competence and working in a disciplined and ethical manner.

Scope

The scope covers the following :

- Communicate effectively at the workplace
- Work effectively
- Maintain and enhance professional competence
- Work in a disciplined and ethical manner
- Uphold social diversity at the workplace

Elements and Performance Criteria

Communicate effectively at the workplace

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

- PC1.** exchange information and instruction with colleagues, and seek clarifications and feedback as necessary
- PC2.** assist colleagues where required
- PC3.** follow business communication etiquette in all interactions and communicative formats (online, digital, and in-person)
- PC4.** document and share all relevant information with stakeholders in agreed formats and as per agreed timelines

Work effectively

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

- PC5.** identify and obtain clarity regarding organisational, team and own goals and targets
- PC6.** prioritise and plan work in order to achieve goals and targets
- PC7.** monitor own and team performance as per agreed plan
- PC8.** complete duties accurately, systematically and within required timeframes
- PC9.** express emotions appropriately at the workplace and manage own response to heightened emotions
- PC10.** maintain orderliness and cleanliness in the work area

Maintain and enhance professional competence

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

- PC11.** identify own strengths and weaknesses in relation to goals and targets
- PC12.** adapt self, service, or product to meet success criteria
- PC13.** seek and select opportunities for continuous professional development
- PC14.** formulate a professional development plan to enhance capabilities
- PC15.** build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations

PC16. examine developments and trends in field of work and their potential impact on work

PC17. take feedback from peers, supervisors and clients to improve own performance and practices

Work in a disciplined and ethical manner

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

PC18. perform tasks as per workplace standards, organisational policies and legislative requirements

PC19. display appropriate professional appearance at the workplace and adhere to the organisational dress code

PC20. demonstrate responsible and disciplined behaviour at the workplace such as punctuality; completing tasks as per given time and standards; demonstrating professional behaviour at all times, adopting environment- friendly practices, etc.

PC21. identify the cause of conflict and options for resolution with peers or escalate grievances and problems to appropriate authority as per procedure for conflict resolution

PC22. protect the rights of the client and organisation when delivering services

PC23. ensure services are delivered equally to all clients regardless of personal and cultural beliefs

PC24. operate within an agreed ethical code of practice and report unethical conduct to the appropriate authorities

PC25. follow organisational guidelines and legal requirements on disclosure and confidentiality

Uphold social diversity at the workplace

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

PC26. recognize and evaluate biased practices against underrepresented groups like women and persons with disabilities, in workplace systems and processes

PC27. identify and report discrimination and harassment based on gender, disability, or cultural difference at the workplace

PC28. use inclusive or neutral language and gestures in all interactions

PC29. respect the personal and professional space of others

PC30. access grievance redressal mechanisms as per legislations

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organisation's policies on dress code, workplace timings, workplace behaviour, performance management, incentives, delivery standards, information security, etc.

KU2. organizational hierarchy and escalation matrix

KU3. importance of the individual's role in the workflow

KU4. organisational norms on health, safety and sustainability

KU5. work area inspection procedures and practices

KU6. professional etiquette and grooming

KU7. communication etiquette across communicative mediums (online, digital, and in-person) including strategies/methods for sharing information, documentation, and providing and receiving feedback

KU8. importance of self-evaluations and developing a continuous learning and professional development plan

- KU9.** developments and trends impacting professional practice
- KU10.** importance of taking and using feedback from colleagues and clients to identify and introduce improvements in work performance
- KU11.** professional ethics and workplace norms on reporting and/or penalizing unethical behaviour and practices.
- KU12.** guidelines and legal requirements on disclosure, confidentiality, and conflicts of interest
- KU13.** strategies for collaboration with colleagues and clients.
- KU14.** professional responses and strategies against inappropriate language or behaviour toward self and others
- KU15.** Implicit bias (based on gender, disability, class, caste, colour, race, culture, religion, etc.) and its consequences in the workplace
- KU16.** organizational guidelines, prevalent legislations and accessibility norms and processes to support PwDs at the workplace
- KU17.** strategies for time, effort and resource allocation towards the goals.
- KU18.** basic concepts of work productivity including waste reduction, efficient material usage and optimization of time

Generic Skills (GS)

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

- GS1.** complete documentation and forms such as work orders, invoices maintenance records activity logs, attendance sheets as per organizational format in English and/or local language
- GS2.** write basic accident or incident report accurately in an appropriate format
- GS3.** read warnings, instructions and other text material on product labels, components, etc. and relevant signages, warnings, labels or descriptions on equipment, etc. while carrying out work activities
- GS4.** convey and share technical information clearly using appropriate language
- GS5.** clarify task-related information
- GS6.** liaise with authorities and supervisors as per organizational protocol
- GS7.** listen, speak, and write in an inclusive, respectful manner in line with organizational protocol
- GS8.** seek clarification from immediate supervisor or responsible authority or exercise most appropriate solutions to safety breaches at work
- GS9.** report to the supervisor and when to deal with a colleague depending on the type of concern
- GS10.** deliver product to next work process on time
- GS11.** improve work process and report potential areas of delays and disruptions
- GS12.** communicate problems appropriately to others
- GS13.** identify symptoms of the fault to the cause of the problem and resolve, otherwise seek assistance and support from other sources to solve the problem
- GS14.** anticipate and avoid hazards that may occur during repairs because of tools, materials used or repair processes
- GS15.** complete tasks efficiently and accurately within stipulated time
- GS16.** appreciate and respect social diversity in all professional settings
- GS17.** develop awareness and accountability for perspectives on gender, disabilities, and socio-cultural issues leading to discrimination, bias, or harassment at the workplace

GS18. maintain positive and effective relationships with colleagues and customers

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Communicate effectively at the workplace</i>	5	13	-	-
PC1. exchange information and instruction with colleagues, and seek clarifications and feedback as necessary	1	3	-	-
PC2. assist colleagues where required	1	3	-	-
PC3. follow business communication etiquette in all interactions and communicative formats (online, digital, and in-person)	1	4	-	-
PC4. document and share all relevant information with stakeholders in agreed formats and as per agreed timelines	2	3	-	-
<i>Work effectively</i>	6	13	-	-
PC5. identify and obtain clarity regarding organisational, team and own goals and targets	1	2	-	-
PC6. prioritise and plan work in order to achieve goals and targets	1	2	-	-
PC7. monitor own and team performance as per agreed plan	1	2	-	-
PC8. complete duties accurately, systematically and within required timeframes	1	2	-	-
PC9. express emotions appropriately at the workplace and manage own response to heightened emotions	1	2	-	-
PC10. maintain orderliness and cleanliness in the work area	1	3	-	-
<i>Maintain and enhance professional competence</i>	8	7	-	-
PC11. identify own strengths and weaknesses in relation to goals and targets	1	1	-	-
PC12. adapt self, service, or product to meet success criteria	1	1	-	-
PC13. seek and select opportunities for continuous professional development	1	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. formulate a professional development plan to enhance capabilities	2	1	-	-
PC15. build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations	1	1	-	-
PC16. examine developments and trends in field of work and their potential impact on work	1	1	-	-
PC17. take feedback from peers, supervisors and clients to improve own performance and practices	1	1	-	-
<i>Work in a disciplined and ethical manner</i>	11	16	-	-
PC18. perform tasks as per workplace standards, organisational policies and legislative requirements	2	2	-	-
PC19. display appropriate professional appearance at the workplace and adhere to the organisational dress code	1	2	-	-
PC20. demonstrate responsible and disciplined behaviour at the workplace such as punctuality; completing tasks as per given time and standards; demonstrating professional behaviour at all times, adopting environment- friendly practices, etc.	1	2	-	-
PC21. identify the cause of conflict and options for resolution with peers or escalate grievances and problems to appropriate authority as per procedure for conflict resolution	2	2	-	-
PC22. protect the rights of the client and organisation when delivering services	1	2	-	-
PC23. ensure services are delivered equally to all clients regardless of personal and cultural beliefs	1	2	-	-
PC24. operate within an agreed ethical code of practice and report unethical conduct to the appropriate authorities	2	2	-	-
PC25. follow organisational guidelines and legal requirements on disclosure and confidentiality	1	2	-	-
<i>Uphold social diversity at the workplace</i>	10	11	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. recognize and evaluate biased practices against underrepresented groups like women and persons with disabilities, in workplace systems and processes	2	2	-	-
PC27. identify and report discrimination and harassment based on gender, disability, or cultural difference at the workplace	2	2	-	-
PC28. use inclusive or neutral language and gestures in all interactions	2	2	-	-
PC29. respect the personal and professional space of others	2	2	-	-
PC30. access grievance redressal mechanisms as per legislations	2	3	-	-
NOS Total	40	60	-	-

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N9905
NOS Name	Work effectively at the workplace
Sector	Electronics
Sub-Sector	Generic
Occupation	Generic - Organizational Behaviour
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	24/02/2022
Next Review Date	30/12/2026
NSQC Clearance Date	30/12/2021

ELE/N1002: Apply health and safety practices at the workplace

Description

This OS unit is about knowledge and practices relating to health, safety and security that candidates need to use in the workplace.

Scope

The scope covers the following :

- Deal with workplace hazards
- Apply fire safety practices
- Follow emergencies, rescue and first-aid procedures
- Effective waste management/recycling practices

Elements and Performance Criteria

Deal with workplace hazards

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

- PC1.** identify job-site hazards and possible causes of accident in the workplace
- PC2.** perform work complying to organizational safe working practices and observing hazard signs displayed on containers, equipment and in various work areas such as inside buildings, in open areas and public spaces, etc.
- PC3.** 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
- PC4.** follow standard safety procedures while handling tool/ ,equipment, hazardous substances and while working in hazardous environments
- PC5.** dispose electronic waste (such as toxins; metals such as lead, cadmium, barium; flame retardant plastics, welding slag etc.) as per industry approved techniques
- PC6.** avoid damage of components due to negligence in electrostatic discharge (ESD) procedures
- PC7.** locate general health and safety equipment in the workplace such as fire extinguishers; first aid equipment; safety instruments, clothing and installations (fire exits, exhaust fans)
- PC8.** maintain appropriate posture while handling heavy objects
- PC9.** apply good housekeeping practices at all times

Apply fire safety practices

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

- PC10.** take preventive measures to prevent fire hazards
- PC11.**
 - use appropriate fire extinguishers for different types of fires
 - Types of fires: Class A: e.g. ordinary solid combustibles, such as wood, paper, cloth, plastic, charcoal, etc.; Class B: flammable liquids and gases, such as gasoline, propane, diesel fuel, tar, cooking oil, and similar substances; Class C: e.g. electrical equipment such as appliances, wiring, breaker panels, etc. (These categories of fires become Class A, B, and D fires when the electrical equipment that initiated the fire is no I
- PC12.** exhibit rescue and first-aid techniques in case of fire or electrocution

Follow emergencies, rescue and first-aid procedures

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

- PC13.** administer appropriate first aid to victims in case of bleeding, burns, choking, electric shock, poisoning etc.
- PC14.** administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock,
- PC15.** participate regularly in emergency procedures such as raising alarm, safe/efficient, evacuation, correct means of taking shelter and escaping, correct assembly point, roll call, correct return to work
- PC16.** use correct method to move injured people and others during an emergency

Effective waste management/recycling practices

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

- PC17.** identify recyclable and non-recyclable, and hazardous waste generated
- PC18.** segregate waste into different categories
- PC19.** ensure disposal of non-recyclable waste appropriately
- PC20.** deposit non-recyclable and reusable material at identified location
- PC21.** follow processes specified for disposal of hazardous waste

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** importance of working in clean and safe work environment following safety practices and procedures
- KU2.** health and safety roles and responsibilities of relevant personnel within and outside the organisation
- KU3.** key internal and external sources of health and safety information
- KU4.** basic knowledge of electronic devices and related health risks
- KU5.** meaning of hazards and risks
- KU6.** 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.
- KU7.** methods of accident prevention
- KU8.** importance of using protective clothing/equipment while working
- KU9.** general principles for identifying and controlling health and safety risks
- KU10.** main hazards and preventive as well as control measures while working with different types of equipment
- KU11.** importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control
- KU12.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment
- KU13.** forms and classifications of hazardous substances
- KU14.** safe working practices while working at various hazardous sites
- KU15.** prevention and control measures to reduce risks from exposure to hazardous substances
- KU16.** health effects associated with exposure to noise and vibration and the appropriate control measures

- KU17.** precautionary activities to prevent the fire accident
- KU18.** various causes of fire such as heating of metal, spontaneous ignition, sparking, electrical eating, loose fires (smoking, welding, etc.) chemical fires etc.
- KU19.** techniques of using the different fire extinguishers
- KU20.** different methods and material to extinguish fires
- KU21.** different materials used for extinguishing fire such as sand, water, foam, CO2, dry powder
- KU22.** rescue techniques used during a fire hazard
- KU23.** various types of safety signs and their meaning
- KU24.** basic first aid treatment relevant to the common work place injuries e.g. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries
- KU25.** contents of written accident report
- KU26.** potential injuries and ill health associated with incorrect handling of tools and equipment
- KU27.** safe lifting and carrying practices
- KU28.** potential impact to a person who is moved incorrectly
- KU29.** personal safety, health and dignity issues relating to the movement of a person by others
- KU30.** ESD measures and 5S
- KU31.** efficient utilization and management of material and water
- KU32.** ways to recognize common electrical problems and practices of conserving electricity
- KU33.** usage of different colours of dustbins, categorization of waste into dry, wet, recyclable, nonrecyclable and items of single-use plastics
- KU34.** organization's procedure for minimizing waste
- KU35.** waste management and methods of waste disposal
- KU36.** common sources of pollution and ways to minimize it
- KU37.** names, contact information and location of people responsible for health and safety in the workplace
- KU38.** location of documents and equipment for health and safety compliance/practices in the workplace
- KU39.** safety notices, signs and instructions at workplace

Generic Skills (GS)

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

- GS1.** interpret general health and safety guidelines labels, charts, signages
- GS2.** read operation manuals
- GS3.** write health and safety compliance report
- GS4.** write an accident/incident report in local language or English
- GS5.** provide an emergency or safety incident brief to seniors or relevant authorities in a calm, clear and to-the-point manner
- GS6.** communicate general health and safety guidelines to colleagues/co-workers
- GS7.** communicate appropriately with co-workers in order to clarify instructions and other issues
- GS8.** act in case of any potential hazards observed in the work place

- GS9.** plan and organize their own work schedule, work area, tools, equipment in compliance with organizational policies for health, safety and security
- GS10.** take adequate measures to ensure the safety of clients and visitors at the workplace
- GS11.** identify immediate or temporary solutions to resolve delays
- GS12.** evaluate the work area for health and safety risks or hazards
- GS13.** use cause and effect relations to anticipate potential issues, problems and their solution in the work area related to safety
- GS14.** recognise emergency and potential emergency situations
- GS15.** protect self and others from a health and safety risk or hazard
- GS16.** communicate and collaborate to incorporate sustainable practices (greening) in workplace processes
- GS17.** record data on waste disposal at workplace

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Deal with workplace hazards</i>	20	31	-	-
PC1. identify job-site hazards and possible causes of accident in the workplace	2	3	-	-
PC2. perform work complying to organizational safe working practices and observing hazard signs displayed on containers, equipment and in various work areas such as inside buildings, in open areas and public spaces, etc.	3	4	-	-
PC3. 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	3	4	-	-
PC4. follow standard safety procedures while handling tool/ ,equipment, hazardous substances and while working in hazardous environments	3	4	-	-
PC5. dispose electronic waste (such as toxins; metals such as lead, cadmium, barium; flame retardant plastics, welding slag etc.) as per industry approved techniques	2	4	-	-
PC6. avoid damage of components due to negligence in electrostatic discharge (ESD) procedures	2	3	-	-
PC7. locate general health and safety equipment in the workplace such as fire extinguishers; first aid equipment; safety instruments, clothing and installations (fire exits, exhaust fans)	2	3	-	-
PC8. maintain appropriate posture while handling heavy objects	1	3	-	-
PC9. apply good housekeeping practices at all times	2	3	-	-
<i>Apply fire safety practices</i>	4	9	-	-
PC10. take preventive measures to prevent fire hazards	2	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. <ul style="list-style-type: none"> • use appropriate fire extinguishers for different types of fires • Types of fires: Class A: e.g. ordinary solid combustibles, such as wood, paper, cloth, plastic, charcoal, etc.; Class B: flammable liquids and gases, such as gasoline, propane, diesel fuel, tar, cooking oil, and similar substances; Class C: e.g. electrical equipment such as appliances, wiring, breaker panels, etc. (These categories of fires become Class A, B, and D fires when the electrical equipment that initiated the fire is no I 	1	3	-	-
PC12. exhibit rescue and first-aid techniques in case of fire or electrocution	1	3	-	-
<i>Follow emergencies, rescue and first-aid procedures</i>	6	13	-	-
PC13. administer appropriate first aid to victims in case of bleeding, burns, choking, electric shock, poisoning etc.	1	3	-	-
PC14. administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock,	1	2	-	-
PC15. participate regularly in emergency procedures such as raising alarm, safe/efficient, evacuation, correct means of taking shelter and escaping, correct assembly point, roll call, correct return to work	2	4	-	-
PC16. use correct method to move injured people and others during an emergency	2	4	-	-
<i>Effective waste management/recycling practices</i>	5	12	-	-
PC17. identify recyclable and non-recyclable, and hazardous waste generated	1	3	-	-
PC18. segregate waste into different categories	1	2	-	-
PC19. ensure disposal of non-recyclable waste appropriately	1	2	-	-
PC20. deposit non-recyclable and reusable material at identified location	1	3	-	-
PC21. follow processes specified for disposal of hazardous waste	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	35	65	-	-

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N1002
NOS Name	Apply health and safety practices at the workplace
Sector	Electronics
Sub-Sector	Generic
Occupation	Generic - Health Safety
NSQF Level	4
Credits	TBD
Version	3.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criterion.
6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

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

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ELE/N3101.Engage with customer for service	40	50	-	10	100	35
ELE/N3112.Install and repair appliances	40	50	-	10	100	35
ELE/N9905.Work effectively at the workplace	40	60	-	-	100	15
ELE/N1002.Apply health and safety practices at the workplace	35	65	-	-	100	15
Total	155	225	-	20	400	100

Acronyms

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

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.
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.
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 Outcome	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 task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
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.