



Battery System Repair Technician

QP Code: ELE/Q7001

Version: 1.0

NSQF Level: 4

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ELE/Q7001: Battery System Repair Technician

Brief Job Description

The Battery system repair technician is responsible for servicing and repairing of the battery system in an Electric Vehicle. Along with that, s/he tests the battery system after servicing and takes corrective actions against any malfunction detected.

Personal Attributes

The job requires the individual to have the ability to build interpersonal relationships and critical thinking. S/he must have attention to details, and ability to execute the testing and repairing activities as per standard operating procedures. The individual should be good at following instructions and work collaboratively with diverse teams. S/he must stay abreast with technology changes, and demonstrate strong technical expertise. Also, s/he must exhibit good customer service attributes - courtesy, problem-solving, reliability, good decision-making skills, etc.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [ELE/N7006: Identify service related issues of the customer](#)
2. [ELE/N7002: Repair faulty parts in the Battery System](#)
3. [ELE/N7001: Test the Battery System after service and repair](#)
4. [ELE/N9905: Work effectively at the workplace](#)
5. [ELE/N1002: Apply health and safety practices at the workplace](#)

Qualification Pack (QP) Parameters

Sector	Electronics
Sub-Sector	E-Mobility and Battery
Occupation	After Sale Support-EM&B
Country	India
NSQF Level	4
Credits	NA

Aligned to NCO/ISCO/ISIC Code	NCO-2016/NIL
Minimum Educational Qualification & Experience	I.T.I (After 10th) with 1 Year of experience in the relevant field OR Diploma (Electrical or Electronics Engineering) OR Certificate-NSQF (Level-3 in the domain of EV / Electrical / Mechanical / Automobile (Automotive Service Technician))
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	30/12/2021
Next Review Date	30/12/2026
Deactivation Date	31/07/2024
NSQC Approval Date	30/12/2021
Version	1.0
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NQR Version	1.0

ELE/N7006: Identify service related issues of the customer

Description

This OS unit is about identifying service related issues of the customer and suggesting suitable solutions with proper documentations

Scope

The scope covers the following :

- Interacting with the customers
- Identifying customer's issues
- Completing documentation
- Achieving productivity and quality

Elements and Performance Criteria

Interacting with the customers

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

- PC1.** greet the customers as per company's service policy
- PC2.** inform the customer about company's service policy such as warranty period, service charge etc.
- PC3.** create comfortable environment for the customers in the workshop
- PC4.** communicate in English, Hindi or local language as per convenience of the customer

Identifying customer's issues

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

- PC5.** discuss about customer's issues in the electric vehicle
- PC6.** explain the problem to the customer with possible solutions
- PC7.** assess the type of repair to be performed i.e., front end repair or technical level repair
- PC8.** inform the customer about repairing process, time and cost or inclusion under warranty
- PC9.** seek customer's approval for further service

Completing documentation

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

- PC10.** record details of the customer and the electric vehicle
- PC11.** identify warranty coverage of the item and other terms and conditions
- PC12.** inform warranty policy of the component brand to the customer
- PC13.** prepare invoice towards mutually agreed repair or service activity
- PC14.** seek feedback from the customer about his experience in the workshop
- PC15.** perform stock management, spare parts ordering etc. using interactive system

Achieving productivity and quality

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

- PC16.** perform repair or service activity as per Service Level Agreement (SLA)
- PC17.** demonstrate 100% customer satisfaction after replacement and repair services

PC18. demonstrate non-repetition of the problem or any further escalation

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organizational culture and customer profile
- KU2.** customer relationship management policies of the organization
- KU3.** code of conduct required in the industry
- KU4.** documentation policy of the company
- KU5.** product portfolio of the organization
- KU6.** various types of issues reported by the customers in the past
- KU7.** behavioral aspects and etiquette to be followed
- KU8.** precautions to be taken while handling field calls and dealing with customers
- KU9.** relevant reference sheets, manuals and documents to carry in the field
- KU10.** inform customer about contractual issues such as warranty, cost of service and module replacement
- KU11.** techniques to diagnose cause of the problem such as physical damage or any technical issue
- KU12.** various types of repairing methods such as front end repair or technical level repair
- KU13.** working in interactive systems such as ERP
- KU14.** various ERP modules such as spare parts management, order placement etc.
- KU15.** Quality standards to be followed

Generic Skills (GS)

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

- GS1.** write common words/signs and set phrases used in the work
- GS2.** prepare checklists, reports and fill out forms in local language or Hindi/English
- GS3.** measure various dimensions as per task requirements
- GS4.** perform arithmetic calculations of addition, subtraction, multiplication and division processes
- GS5.** interpret information (symbols, dimensions, terminology, dates etc.) given in local language or Hindi
- GS6.** state information, doubts and concerns about work related matters in local language or Hindi/English
- GS7.** participate in workplace conversations and meetings
- GS8.** communicate by telephone in local language or Hindi/English
- GS9.** spot discrepancies or errors and select the most efficient solution
- GS10.** plan one's daily tasks to achieve maximum productivity
- GS11.** establish priorities and deadlines in consultation with others and record them
- GS12.** be punctual and work as per agreed priorities
- GS13.** manage distractions and maintain workplace discipline
- GS14.** read product and module serial numbers

- GS15.** listen to customer's concerns carefully and address them
- GS16.** develop a rapport and good relation with customers
- GS17.** decide on the necessity of customer's interaction with supervisor
- GS18.** identify ways to increase productivity and reduce errors
- GS19.** to achieve the target within stipulated time frame

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Interacting with the customers</i>	8	8	-	-
PC1. greet the customers as per company's service policy	2	2	-	-
PC2. inform the customer about company's service policy such as warranty period, service charge etc.	2	2	-	-
PC3. create comfortable environment for the customers in the workshop	2	2	-	-
PC4. communicate in English, Hindi or local language as per convenience of the customer	2	2	-	-
<i>Identifying customer's issues</i>	12	17	-	-
PC5. discuss about customer's issues in the electric vehicle	2	3	-	-
PC6. explain the problem to the customer with possible solutions	2	3	-	-
PC7. assess the type of repair to be performed i.e., front end repair or technical level repair	3	4	-	-
PC8. inform the customer about repairing process, time and cost or inclusion under warranty	3	4	-	-
PC9. seek customer's approval for further service	2	3	-	-
<i>Completing documentation</i>	12	23	-	-
PC10. record details of the customer and the electric vehicle	2	4	-	-
PC11. identify warranty coverage of the item and other terms and conditions	2	4	-	-
PC12. inform warranty policy of the component brand to the customer	2	4	-	-
PC13. prepare invoice towards mutually agreed repair or service activity	2	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. seek feedback from the customer about his experience in the workshop	2	4	-	-
PC15. perform stock management, spare parts ordering etc. using interactive system	2	4	-	-
<i>Achieving productivity and quality</i>	8	12	-	-
PC16. perform repair or service activity as per Service Level Agreement (SLA)	2	4	-	-
PC17. demonstrate 100% customer satisfaction after replacement and repair services	3	4	-	-
PC18. demonstrate non-repetition of the problem or any further escalation	3	4	-	-
NOS Total	40	60	-	-

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N7006
NOS Name	Identify service related issues of the customer
Sector	Electronics
Sub-Sector	E-Mobility and Battery
Occupation	After Sale Support-EM&B
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	30/12/2021
Next Review Date	30/12/2026
NSQC Clearance Date	30/12/2021

ELE/N7002: Repair faulty parts in the Battery System

Description

This OS unit is about servicing and repairing the battery system

Scope

The scope covers the following :

- Preparing for the service and repair
- Repairing or replacing faulty parts after diagnosis
- Reporting to the superior

Elements and Performance Criteria

Preparing for the service and repair

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

- PC1.** review troubleshooting instructions sheets
- PC2.** select relevant tools, 100% approved and verified field replaceable part as per SOP
- PC3.** inspect electrical connections, circuits, terminals and earthing to avoid electrical shock
- PC4.** inspect entire battery system / battery pack for various defects
- PC5.** inspect battery monitoring integrated circuit (IC) for proper functioning
- PC6.** inspect passive cell balancing up to 1.3 A per cell and voltage of single cell (0.1 - 5.0 V, resolution 1 MV)
- PC7.** measure single cell internal resistance for implementing under / over voltage protection
- PC8.** decide the replacement or repair of modules on field or at the company's workshop

Repairing or replacing faulty parts after diagnosis

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

- PC9.** apply the required current of the controller for measuring voltage of each cell
- PC10.** practice isolation of the battery pack between current and charger for estimating state of charge (SOC)
- PC11.** practice connection of the battery system with positive and negative cells
- PC12.** perform fixing of common problems faced with ICs, MOSFET, plugs and wiring of the devices
- PC13.** disassemble and re-assemble the system for removal and replacement of any faulty parts
- PC14.** communicate with technical helpdesk to seek any assistance at site
- PC15.** conclude the task as per standard operating procedure and quality benchmark of the company
- PC16.** inform customer about the service / repairing activity been undertaken
- PC17.** instruct customer on procedures to be followed for operating the battery

Reporting to the superior

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

- PC18.** inform on the workload and completion status
- PC19.** report work status through proper documentation as per organizational standards

- PC20.** intimate about the problem that cannot be resolved at field with reasons
- PC21.** report 100% on time completion of service, repair or part replacement with reference to agreed target and time or reasons for not meeting target
- PC22.** prepare the feedback form on customer satisfaction level

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organizational policies on incentives, delivery standard and personnel management
- KU2.** organization's sales and after sales support policy
- KU3.** importance of the individual's role in the workflow
- KU4.** reporting structure followed in the organization
- KU5.** organizational policy on product's warranty and other terms and conditions
- KU6.** basic principles governing AC/DC and electronic circuits
- KU7.** principles, categories, types and applications of a battery
- KU8.** safe and hazardous voltage practices
- KU9.** various types of battery system architectures
- KU10.** functionalities of accessories such as chargers, ICs, circuits, terminals etc. and concept of cell balancing
- KU11.** methods to measure cell voltage, internal resistance
- KU12.** standard work practices for disassembling and assembling a battery pack
- KU13.** troubleshooting methods for various types of batteries
- KU14.** Inspection techniques and various checks for identification of faulty parts
- KU15.** usage of various tools for repairing of battery system such as multimeter, soldering gun etc.
- KU16.** techniques for replacing the faulty components
- KU17.** documentation performed during the entire service and repairing process
- KU18.** necessary product and service related information to be communicated to the customer
- KU19.** applicable safety and quality standards during the entire process

Generic Skills (GS)

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

- GS1.** read job sheet and/or complaints registered at customer care
- GS2.** gather customer requirements and feedback
- GS3.** share technical information clearly using appropriate language
- GS4.** analyze risks to minimize losses or damages
- GS5.** share work load among colleagues
- GS6.** refer manuals, health and safety instructions, memos, reports, job cards etc.
- GS7.** document the completed work
- GS8.** maintain daily work logbook and inform the superiors

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Preparing for the service and repair</i>	8	17	-	-
PC1. review troubleshooting instructions sheets	1	2	-	-
PC2. select relevant tools, 100% approved and verified field replaceable part as per SOP	1	2	-	-
PC3. inspect electrical connections, circuits, terminals and earthing to avoid electrical shock	1	2	-	-
PC4. inspect entire battery system / battery pack for various defects	1	2	-	-
PC5. inspect battery monitoring integrated circuit (IC) for proper functioning	1	2	-	-
PC6. inspect passive cell balancing up to 1.3 A per cell and voltage of single cell (0.1 - 5.0 V, resolution 1 MV)	1	2	-	-
PC7. measure single cell internal resistance for implementing under / over voltage protection	1	2	-	-
PC8. decide the replacement or repair of modules on field or at the company's workshop	1	3	-	-
<i>Repairing or replacing faulty parts after diagnosis</i>	14	35	-	-
PC9. apply the required current of the controller for measuring voltage of each cell	2	4	-	-
PC10. practice isolation of the battery pack between current and charger for estimating state of charge (SOC)	2	5	-	-
PC11. practice connection of the battery system with positive and negative cells	2	5	-	-
PC12. perform fixing of common problems faced with ICs, MOSFAT, plugs and wiring of the devices	2	5	-	-
PC13. disassemble and re-assemble the system for removal and replacement of any faulty parts	2	4	-	-
PC14. communicate with technical helpdesk to seek any assistance at site	1	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. conclude the task as per standard operating procedure and quality benchmark of the company	1	3	-	-
PC16. inform customer about the service / repairing activity been undertaken	1	3	-	-
PC17. instruct customer on procedures to be followed for operating the battery	1	3	-	-
<i>Reporting to the superior</i>	8	18	-	-
PC18. inform on the workload and completion status	2	4	-	-
PC19. report work status through proper documentation as per organizational standards	1	3	-	-
PC20. intimate about the problem that cannot be resolved at field with reasons	1	3	-	-
PC21. report 100% on time completion of service, repair or part replacement with reference to agreed target and time or reasons for not meeting target	2	4	-	-
PC22. prepare the feedback form on customer satisfaction level	2	4	-	-
NOS Total	30	70	-	-

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N7002
NOS Name	Repair faulty parts in the Battery System
Sector	Electronics
Sub-Sector	E-Mobility and Battery
Occupation	After Sale Support-EM&B
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	30/12/2021
Next Review Date	30/12/2026
NSQC Clearance Date	30/12/2021

ELE/N7001: Test the Battery System after service and repair

Description

This OS unit is about testing the battery system after servicing

Scope

The scope covers the following :

- Testing the battery system
- Rectifying malfunctions, if any

Elements and Performance Criteria

Testing the battery system thoroughly

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

- PC1.** review standard procedures for battery cell and module testing
- PC2.** locate the connectors and release them to remove the wirings from the battery pack
- PC3.** use recommended tools to open the battery pack for testing
- PC4.** test battery cells and modules for various performance parameters
- PC5.** comply with globally accepted regulatory standards for technical specifications while testing
- PC6.** maintain test records in a logbook

Rectifying the malfunctions, if any

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

- PC7.** review the test results as per standards specified in the supplier's manual
- PC8.** inspect passive & active cell balancing and rated capacity of the battery pack
- PC9.** summarize test results in the prescribed format
- PC10.** identify cause of the problem, if test results diverge from specifications
- PC11.** seek technical assistance from supervisor / engineers on faults that cannot be fixed
- PC12.** apply correct techniques to rectify malfunctions as per standard operating procedure
- PC13.** retest the battery system to ensure that design specifications are met
- PC14.** report rectification activities to superiors for future reference

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant legislation, standards, policies, and procedures followed in the company
- KU2.** documentation procedure followed in the company
- KU3.** company's policy on servicing time, turnaround time, working hours
- KU4.** various tests and their execution procedures
- KU5.** standard techniques to check defects / malfunctions
- KU6.** concept of passive and active cell balancing

KU7. techniques to measure rated capacity of the battery pack

KU8. documentation required against testing activities

KU9. quality and safety standards to be followed

Generic Skills (GS)

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

GS1. fill activity logs, attendance sheets as per organizational formats in English/Hindi or local language

GS2. read, listen and interpret information correctly from various work instruction documents

GS3. plan and organize own task

GS4. document the completed work

GS5. share work load with fellow technicians

GS6. plan, prioritize and sequence work as per requirement

GS7. provide client with appropriate information and services

GS8. escalate issues faced to superior without any delay

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Testing the battery system thoroughly</i>	12	26	-	-
PC1. review standard procedures for battery cell and module testing	2	4	-	-
PC2. locate the connectors and release them to remove the wirings from the battery pack	2	4	-	-
PC3. use recommended tools to open the battery pack for testing	2	5	-	-
PC4. test battery cells and modules for various performance parameters	2	5	-	-
PC5. comply with globally accepted regulatory standards for technical specifications while testing	2	4	-	-
PC6. maintain test records in a logbook	2	4	-	-
<i>Rectifying the malfunctions, if any</i>	18	44	-	-
PC7. review the test results as per standards specified in the supplier's manual	2	6	-	-
PC8. inspect passive & active cell balancing and rated capacity of the battery pack	3	6	-	-
PC9. summarize test results in the prescribed format	2	6	-	-
PC10. identify cause of the problem, if test results diverge from specifications	3	6	-	-
PC11. seek technical assistance from supervisor / engineers on faults that cannot be fixed	2	5	-	-
PC12. apply correct techniques to rectify malfunctions as per standard operating procedure	2	5	-	-
PC13. retest the battery system to ensure that design specifications are met	2	5	-	-
PC14. report rectification activities to superiors for future reference	2	5	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	30	70	-	-

National Occupational Standards (NOS) Parameters

NOS Code	ELE/N7001
NOS Name	Test the Battery System after service and repair
Sector	Electronics
Sub-Sector	E-Mobility and Battery
Occupation	After Sale Support-EM&B
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	30/12/2021
Next Review Date	30/12/2026
NSQC Clearance Date	30/12/2021

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



Qualification Pack



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 the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the 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 the theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, 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/N7006. Identify service related issues of the customer	40	60	-	-	100	20
ELE/N7002. Repair faulty parts in the Battery System	30	70	-	-	100	20
ELE/N7001. Test the Battery System after service and repair	30	70	-	-	100	20
ELE/N9905. Work effectively at the workplace	40	60	-	-	100	20
ELE/N1002. Apply health and safety practices at the workplace	35	65	-	-	100	20
Total	175	325	-	-	500	100

Acronyms

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

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.