



# Field Technician Computing And Peripherals

Options: Laptop and its peripherals

QP Code: ELE/Q4601

Version: 2.0

NSQF Level: 4

Electronic Sector Skill Council of India || 602, 6th Floor, Ansal Chambers 2, Bikaji Cama Place  
New Delhi - 110066



## Qualification Pack

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## Qualification Pack

# ELE/Q4601: Field Technician Computing And Peripherals

## Brief Job Description

A Field Technician -- Computing & Peripherals is responsible for visiting customer premises to install and carry out repair and maintenance of a desktop computer. The individual carries out installation and troubleshooting of computer peripherals also. The individual may also carry out installation, repair and maintenance of a laptop and relevant peripherals.

## Personal Attributes

The individual must be punctual and have the ability to communicate professionally. Reading, writing, problem-solving skills along with good hand-eye co-ordination are other important attributes required in this job role. The individual must be comfortable with travelling to customer premises to perform her/ his duties.

## Applicable National Occupational Standards (NOS)

### Compulsory NOS:

1. [ELE/N4601: Evaluate the customer requirements and computer issues](#)
2. [ELE/N3155: Install the desktop computer and its peripherals](#)
3. [ELE/N4603: Carry out repair and maintenance of a desktop computer and its peripherals](#)
4. [ELE/N9905: Work effectively at the workplace](#)
5. [ELE/N1002: Apply health and safety practices at the workplace](#)

### Options(Not mandatory):

Option : Laptop and its peripherals

Installing, diagnosing and rectifying issues with a laptop and its peripherals.

1. [ELE/N3153: Install laptop and its peripherals](#)
2. [ELE/N3154: Carry out repair and maintenance of laptop and its peripherals](#)

## Qualification Pack (QP) Parameters

<b>Sector</b>	Electronics
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### Qualification Pack

<b>Sub-Sector</b>	Consumer Electronics & IT Hardware
<b>Occupation</b>	After Sales Service
<b>Country</b>	India
<b>NSQF Level</b>	4
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/7422.2001
<b>Minimum Educational Qualification &amp; Experience</b>	10th Class with 3 Years of experience (relevant) OR Certificate-NSQF ((of Level-3 in the domain of Electronics / Electrical / Mechanical) OR Diploma (in Electrical or Electronics Engineering) ) OR 12th Class/I.T.I ((After 10th)) with 1 Year of experience (relevant)
<b>Minimum Level of Education for Training in School</b>	10th Class
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	30/12/2021
<b>Next Review Date</b>	30/12/2026
<b>NSQC Approval Date</b>	30/12/2021
<b>Version</b>	2.0
<b>Reference code on NQR</b>	2021/EHW/ESSC/04794
<b>NQR Version</b>	1.0

## Qualification Pack

### ELE/N4601: Evaluate the customer requirements and computer issues

#### Description

This OS unit is about interacting with the customer, visiting their premises to assess the problem and suggesting appropriate solutions.

#### Scope

The scope covers the following :

- Prepare to visit the customer
- Visit the customer and assess the computer issue
- Explain the action required and costs involved
- Comply with the quality and safety standards

#### Elements and Performance Criteria

##### *Prepare to visit the customer*

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

- PC1.** interact with the customer over the phone to assess their needs/ problem(s)
- PC2.** obtain the relevant details from the customer for visiting their premises
- PC3.** check with the customer if replacement or repair of a module may be required
- PC4.** arrange the necessary tools, equipment, spare parts and Personal Protective Equipment
- PC5.** apply the business code of conduct while interacting with the customer

##### *Visit the customer and assess the computer issue*

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

- PC6.** visit the customer premises on the time given by the customer
- PC7.** follow the site-visit etiquette at the customer premises
- PC8.** discuss the issue with the customer to get complete information about the issue being faced
- PC9.** check the personal computer to assess the need for carrying out repair or replacement

##### *Explain the action required and costs involved*

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

- PC10.** explain the action that needs to be taken to the customer along with the resolution time
- PC11.** check if the product has active warranty coverage
- PC12.** summarise the costs involved to the customer

##### *Comply with the quality and safety standards*

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

- PC13.** follow the Standard Operating Procedure (SOP) to detect issues with the computer system
- PC14.** use the necessary PPE while working on the computer system
- PC15.** ensure own and the customer's safety from any electricity hazards
- PC16.** apply the organisational policy to deal with any emergencies/ accidents

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### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** relevant laws and regulations
- KU2.** business code of conduct and client visit etiquette
- KU3.** relevant documentation requirements
- KU4.** company's reporting structure
- KU5.** applicable health and safety standards
- KU6.** common problems with a computer system and its peripherals
- KU7.** established methods to detect problems with computer system and peripherals
- KU8.** basic electronics of computer systems
- KU9.** common computer hardware and maintenance needs
- KU10.** functions of electrical and mechanical parts/ modules
- KU11.** relevant occupational and environmental hazards and the ways to deal with them
- KU12.** relevant Personal Protective Equipment (PPE) and its correct use
- KU13.** appropriate action to take in case of an emergency/ accident
- KU14.** the correct method of administering first aid
- KU15.** organisational standards on turn-around-time (TAT) for resolving concerns raised by customers

### Generic Skills (GS)

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

- GS1.** read and interpret the relevant product manuals and guides
- GS2.** maintain professional relationships and rapport with customers
- GS3.** listen carefully to understand the customer requirements and issues
- GS4.** prepare relevant documents as per the organisational policy
- GS5.** co-ordinate with co-workers and customers to achieve work-efficiency
- GS6.** identify possible disruptions and take preventive measures or escalate to the relevant authority
- GS7.** plan various tasks for effective time-management
- GS8.** identify improvements to work processes through critical observation
- GS9.** take quick decision to resolve any disruptions in work

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare to visit the customer</i>	<b>16</b>	<b>18</b>	-	<b>4</b>
<b>PC1.</b> interact with the customer over the phone to assess their needs/ problem(s)	-	-	-	-
<b>PC2.</b> obtain the relevant details from the customer for visiting their premises	-	-	-	-
<b>PC3.</b> check with the customer if replacement or repair of a module may be required	-	-	-	-
<b>PC4.</b> arrange the necessary tools, equipment, spare parts and Personal Protective Equipment	-	-	-	-
<b>PC5.</b> apply the business code of conduct while interacting with the customer	-	-	-	-
<i>Visit the customer and assess the computer issue</i>	<b>8</b>	<b>22</b>	-	<b>5</b>
<b>PC6.</b> visit the customer premises on the time given by the customer	-	-	-	-
<b>PC7.</b> follow the site-visit etiquette at the customer premises	-	-	-	-
<b>PC8.</b> discuss the issue with the customer to get complete information about the issue being faced	-	-	-	-
<b>PC9.</b> check the personal computer to assess the need for carrying out repair or replacement	-	-	-	-
<i>Explain the action required and costs involved</i>	<b>2</b>	<b>5</b>	-	<b>2</b>
<b>PC10.</b> explain the action that needs to be taken to the customer along with the resolution time	-	-	-	-
<b>PC11.</b> check if the product has active warranty coverage	-	-	-	-
<b>PC12.</b> summarise the costs involved to the customer	-	-	-	-
<i>Comply with the quality and safety standards</i>	<b>4</b>	<b>10</b>	-	<b>4</b>



## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> follow the Standard Operating Procedure (SOP) to detect issues with the computer system	-	-	-	-
<b>PC14.</b> use the necessary PPE while working on the computer system	-	-	-	-
<b>PC15.</b> ensure own and the customer's safety from any electricity hazards	-	-	-	-
<b>PC16.</b> apply the organisational policy to deal with any emergencies/ accidents	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>55</b>	<b>-</b>	<b>15</b>





## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ELE/N4601
<b>NOS Name</b>	Evaluate the customer requirements and computer issues
<b>Sector</b>	Electronics
<b>Sub-Sector</b>	Consumer Electronics & IT Hardware
<b>Occupation</b>	After Sales Support
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	30/12/2021
<b>Next Review Date</b>	30/12/2026
<b>NSQC Clearance Date</b>	30/12/2021

## **ELE/N3155: Install the desktop computer and its peripherals**

### **Description**

This OS unit is about installing and configuring a desktop computer hardware and software along with its peripherals.

### **Scope**

The scope covers the following :

- Install the desktop computer's hardware and software
- Install the desktop computer peripherals
- Test the desktop computer and its peripherals
- Educate the customer

### **Elements and Performance Criteria**

#### *Install the desktop computer's hardware and software*

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

- PC1.** check for safe conditions for the installation and operation of desktop computer hardware
- PC2.** unpack the computer hardware ensuring its safety
- PC3.** assemble the hardware such as CPU, monitor, keyboard, mouse as per the installation manual
- PC4.** handle hardware modules such as Printed Circuit Board (PCB) complying with the Electrostatic Discharge (ESD) standards
- PC5.** use compatible tools, equipment and parts while assembling the hardware
- PC6.** install a compatible computer Operating System (OS) on the desktop computer
- PC7.** install other relevant computer software/ applications as per the customer requirements

#### *Install the desktop computer peripherals*

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

- PC8.** identify the customer's desktop computer peripheral requirements such as printer, scanner, wireless router, etc.
- PC9.** check the compatibility of the peripherals with the desktop computer system
- PC10.** connect the peripheral devices with the computer hardware as per the SOP
- PC11.** install the peripherals at the appropriate spot(s) as per the customer's instructions
- PC12.** install the software/ drivers for the relevant peripherals on the computer system

#### *Test the desktop computer and its peripherals*

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

- PC13.** switch on the desktop computer and peripherals as per the SOP
- PC14.** check the desktop computer and its peripherals for correct functioning
- PC15.** perform troubleshooting for the identified issues

#### *Educate the customer*

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

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- PC16.** demonstrate the use of computer hardware/ software and peripherals to the customer
- PC17.** explain the common troubleshooting, maintenance processes and precautions to the customer
- PC18.** answer the customer queries regarding the use of the computer system and its peripherals
- PC19.** explain the warranty cover for different computer components and peripherals
- PC20.** carry out documentation as per the organisational policy

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** use of the relevant tools and equipment
- KU2.** different types of computer operating systems and relevant applications
- KU3.** different types of Information Technology (IT) hardware products such as CPU, motherboard, power unit, RAM, hard disk and their functions
- KU4.** the correct process of installing various types of computer operating systems
- KU5.** solutions for common problems encountered while installing software and applications on a desktop
- KU6.** identification of common faults with a desktop hardware
- KU7.** different types of desktop computer peripherals, their functions and standard installation procedure
- KU8.** settings of various desktop software/ applications
- KU9.** voltage and power requirement of different components of a desktop computer
- KU10.** operations of various desktop computer peripherals
- KU11.** safe method of disposing electrical waste
- KU12.** the formation of Alternating Current (AC) and Direct Current (DC)
- KU13.** the process of carrying out Printed Circuit Board (PCB) cool and hot testing
- KU14.** the symbol, denoting letter, function and colour coding for solid type resistor
- KU15.** SMD type resistor coding and value measurement using a multimeter
- KU16.** function, types, symbol and identification of the solid type and SMD type capacitor
- KU17.** testing of a capacitor using a multimeter and SMD tester
- KU18.** use of an SMD tester and how to measure the values on it
- KU19.** function, symbol, denoting letter and properties of different types of coil
- KU20.** how to identify solid and SMD type coil, and pack coil
- KU21.** the process of testing different types of electromagnetic coils
- KU22.** function, symbol, denoting letter and identification of solid and SMD type diode
- KU23.** types and testing of different types of diode
- KU24.** the difference between anode and cathode
- KU25.** the process of testing a transistor
- KU26.** the PNP and NPN concept, and the appropriate denoting letter and symbol
- KU27.** the identification of N-Channel and P-Channel MOSFET, testing of MOSFET, dual MOSFET concept, switching concept, types of MOSFET such as 3 leg MOSFET, 8 Leg MOSFET, etc.



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**KU28.** concept of quartz, clock and pulse, measuring unit, types and real shape

### Generic Skills (GS)

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

- GS1.** prepare work-related documents
- GS2.** read the relevant literature to get the latest updates about the field of work
- GS3.** plan and schedule tasks to achieve work efficiency
- GS4.** listen attentively to understand the client instructions and requirements
- GS5.** communicate clearly and politely
- GS6.** identify disruptions to work and take appropriate preventive action
- GS7.** take quick action to deal with any emergencies and accidents
- GS8.** evaluate all the possible solutions to a problem before selecting the most appropriate one

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Install the desktop computer's hardware and software</i>	<b>4</b>	<b>10</b>	-	<b>4</b>
<b>PC1.</b> check for safe conditions for the installation and operation of desktop computer hardware	-	-	-	-
<b>PC2.</b> unpack the computer hardware ensuring its safety	-	-	-	-
<b>PC3.</b> assemble the hardware such as CPU, monitor, keyboard, mouse as per the installation manual	-	-	-	-
<b>PC4.</b> handle hardware modules such as Printed Circuit Board (PCB) complying with the Electrostatic Discharge (ESD) standards	-	-	-	-
<b>PC5.</b> use compatible tools, equipment and parts while assembling the hardware	-	-	-	-
<b>PC6.</b> install a compatible computer Operating System (OS) on the desktop computer	-	-	-	-
<b>PC7.</b> install other relevant computer software/ applications as per the customer requirements	-	-	-	-
<i>Install the desktop computer peripherals</i>	<b>8</b>	<b>11</b>	-	<b>3</b>
<b>PC8.</b> identify the customer's desktop computer peripheral requirements such as printer, scanner, wireless router, etc.	-	-	-	-
<b>PC9.</b> check the compatibility of the peripherals with the desktop computer system	-	-	-	-
<b>PC10.</b> connect the peripheral devices with the computer hardware as per the SOP	-	-	-	-
<b>PC11.</b> install the peripherals at the appropriate spot(s) as per the customer's instructions	-	-	-	-
<b>PC12.</b> install the software/ drivers for the relevant peripherals on the computer system	-	-	-	-
<i>Test the desktop computer and its peripherals</i>	<b>10</b>	<b>14</b>	-	<b>4</b>

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> switch on the desktop computer and peripherals as per the SOP	-	-	-	-
<b>PC14.</b> check the desktop computer and its peripherals for correct functioning	-	-	-	-
<b>PC15.</b> perform troubleshooting for the identified issues	-	-	-	-
<i>Educate the customer</i>	<b>8</b>	<b>20</b>	-	<b>4</b>
<b>PC16.</b> demonstrate the use of computer hardware/ software and peripherals to the customer	-	-	-	-
<b>PC17.</b> explain the common troubleshooting, maintenance processes and precautions to the customer	-	-	-	-
<b>PC18.</b> answer the customer queries regarding the use of the computer system and its peripherals	-	-	-	-
<b>PC19.</b> explain the warranty cover for different computer components and peripherals	-	-	-	-
<b>PC20.</b> carry out documentation as per the organisational policy	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>55</b>	-	<b>15</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ELE/N3155
<b>NOS Name</b>	Install the desktop computer and its peripherals
<b>Sector</b>	Electronics
<b>Sub-Sector</b>	Consumer Electronics & IT Hardware
<b>Occupation</b>	After Sales Service
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/12/2021
<b>Next Review Date</b>	30/12/2026
<b>NSQC Clearance Date</b>	30/12/2021

## **ELE/N4603: Carry out repair and maintenance of a desktop computer and its peripherals**

### **Description**

This OS unit is about identifying and resolving the issues being experienced with a desktop computer and its peripherals.

### **Scope**

The scope covers the following :

- Identify issues with the desktop computer and peripherals
- Carry out repair and replacement activities
- Comply with the quality standards
- Invoice the customer and take feedback

### **Elements and Performance Criteria**

#### *Identify issues with the desktop computer and peripherals*

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

- PC1.** inquire with the customer regarding the issue with the desktop computer and its peripherals
- PC2.** conduct root-cause analysis to identify the likely problem areas
- PC3.** use a multimeter and other relevant equipment and devices to identify issues with various types of circuit such as volt-in circuit, VRM circuit, RAM supply circuit, etc.
- PC4.** identify issues with various modules such as audio, HDMI, LAN, ROM, etc.
- PC5.** determine the repair/ replacement requirements
- PC6.** establish whether the repair/ replacement activity needs to be undertaken at the customer premises or the workshop
- PC7.** communicate the cost estimates to the customer
- PC8.** initiate repair and maintenance activities with the customer's approval

#### *Carry out repair and replacement activities*

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

- PC9.** disassemble the desktop computer/ peripherals as per the SOP to carry out repair or replacement
- PC10.** use the appropriate repair/ replacement tools and equipment such as soldering gun, crimpers, wire stripper, etc. correctly and safely
- PC11.** carry out repair/ replacement of desktop computer peripherals
- PC12.** co-ordinate with the remote technical helpdesk to seek assistance at the customer premises
- PC13.** test the desktop computer/ peripherals after repair/ replacement for correct functioning
- PC14.** reassemble the desktop computer/ peripherals as per the SOP after carrying out repair/replacement
- PC15.** arrange for the desktop computer components or peripherals that need workshop repair to be transported to the workshop



## Qualification Pack

### *Comply with the quality standards*

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

- PC16.** use the approved tools, equipment and spare parts to carry out repair and replacement activities
- PC17.** carry out a repair/replacement activities within the Turn Around Time (TAT) given to the customer
- PC18.** escalate out of authority issues to the relevant authority in a timely manner
- PC19.** prepare a work-report and relevant documents as per the organisational policy

### *Invoice the customer and take feedback*

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

- PC20.** apply the relevant benefits in the invoice as per the warranty coverage
- PC21.** explain the warranty and subsequent repair and maintenance policy to the customer
- PC22.** process the payment as per the organisational policy
- PC23.** maintain the record of payment
- PC24.** obtain customer feedback to identify any improvement needs

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** various types of computer hardware and relevant components such as a resistor, capacitor, coil, Transistor, etc.
- KU2.** various computer hardware, their functions and manufacturers
- KU3.** how to identify good-quality desktop computer hardware
- KU4.** voltage requirement of different computer hardware and peripherals
- KU5.** basics of electricity such as Alternate Current (AC) and Direct Current (DC)
- KU6.** method of carrying out Printed Circuit Board (PCB) cool and hot testing
- KU7.** various computer operating systems and their working mechanism
- KU8.** various computer software and applications
- KU9.** different types of hardware and software issues encountered with a desktop computer and its peripherals
- KU10.** various desktop computer repair and maintenance tools and equipment
- KU11.** the SOP for disassembling and reassembling various desktop computer components and peripherals, and carry out repair and maintenance
- KU12.** how to protect from Electrostatic Discharge (ESD) hazards
- KU13.** use of a multimeter and other devices to identify issues with AGP Module, PCI and PCE Ex Module, USB Module, SATA Module, VGA Module, PS2 Module, Sound Circuits, South/ North Bridge Supply Circuit, PS ON & Trigger Supply Circuit, Clock Generator Circuit, Diagnostic Card module, resistor, capacitor, coil, transistor, MOSFET, crystal and Integrated Circuit (IC)
- KU14.** different modules in a desktop computer system such as Switched-Mode Power Supply (SMPS), Random Access Memory (RAM), BIOS, Motherboard, USB Drive, Hard Disk etc.
- KU15.** the working principle, functions and common problems encountered with the Switched Mode Power Supply (SMPS)



## Generic Skills (GS)

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

- GS1.** prepare a work progress report in the prescribed format
- GS2.** read the relevant policies, guidelines and manuals
- GS3.** plan and schedule tasks to ensure timely completion
- GS4.** listen attentively to understand the client's concerns and requirements
- GS5.** communicate clearly and politely
- GS6.** evaluate all possible solutions to a problem before choosing the best one
- GS7.** take quick decisions to minimise the impact of any disruptions on work and productivity

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify issues with the desktop computer and peripherals</i>	<b>8</b>	<b>16</b>	-	<b>4</b>
<b>PC1.</b> inquire with the customer regarding the issue with the desktop computer and its peripherals	-	-	-	-
<b>PC2.</b> conduct root-cause analysis to identify the likely problem areas	-	-	-	-
<b>PC3.</b> use a multimeter and other relevant equipment and devices to identify issues with various types of circuit such as volt-in circuit, VRM circuit, RAM supply circuit, etc.	-	-	-	-
<b>PC4.</b> identify issues with various modules such as audio, HDMI, LAN, ROM, etc.	-	-	-	-
<b>PC5.</b> determine the repair/ replacement requirements	-	-	-	-
<b>PC6.</b> establish whether the repair/ replacement activity needs to be undertaken at the customer premises or the workshop	-	-	-	-
<b>PC7.</b> communicate the cost estimates to the customer	-	-	-	-
<b>PC8.</b> initiate repair and maintenance activities with the customer's approval	-	-	-	-
<i>Carry out repair and replacement activities</i>	<b>6</b>	<b>15</b>	-	<b>4</b>
<b>PC9.</b> disassemble the desktop computer/ peripherals as per the SOP to carry out repair or replacement	-	-	-	-
<b>PC10.</b> use the appropriate repair/ replacement tools and equipment such as soldering gun, crimpers, wire stripper, etc. correctly and safely	-	-	-	-
<b>PC11.</b> carry out repair/ replacement of desktop computer peripherals	-	-	-	-
<b>PC12.</b> co-ordinate with the remote technical helpdesk to seek assistance at the customer premises	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> test the desktop computer/ peripherals after repair/ replacement for correct functioning	-	-	-	-
<b>PC14.</b> reassemble the desktop computer/ peripherals as per the SOP after carrying out repair/replacement	-	-	-	-
<b>PC15.</b> arrange for the desktop computer components or peripherals that need workshop repair to be transported to the workshop	-	-	-	-
<i>Comply with the quality standards</i>	<b>8</b>	<b>12</b>	-	<b>3</b>
<b>PC16.</b> use the approved tools, equipment and spare parts to carry out repair and replacement activities	-	-	-	-
<b>PC17.</b> carry out a repair/replacement activities within the Turn Around Time (TAT) given to the customer	-	-	-	-
<b>PC18.</b> escalate out of authority issues to the relevant authority in a timely manner	-	-	-	-
<b>PC19.</b> prepare a work-report and relevant documents as per the organisational policy	-	-	-	-
<i>Invoice the customer and take feedback</i>	<b>8</b>	<b>12</b>	-	<b>4</b>
<b>PC20.</b> apply the relevant benefits in the invoice as per the warranty coverage	-	-	-	-
<b>PC21.</b> explain the warranty and subsequent repair and maintenance policy to the customer	-	-	-	-
<b>PC22.</b> process the payment as per the organisational policy	-	-	-	-
<b>PC23.</b> maintain the record of payment	-	-	-	-
<b>PC24.</b> obtain customer feedback to identify any improvement needs	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>55</b>	-	<b>15</b>



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ELE/N4603
<b>NOS Name</b>	Carry out repair and maintenance of a desktop computer and its peripherals
<b>Sector</b>	Electronics
<b>Sub-Sector</b>	Consumer Electronics & IT Hardware
<b>Occupation</b>	After Sales Support
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	30/12/2021
<b>Next Review Date</b>	30/12/2026
<b>NSQC Clearance Date</b>	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

## Qualification Pack

- 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

## Qualification Pack

- 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





## Qualification Pack

- 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

## Qualification Pack

### Assessment Criteria

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

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> seek and select opportunities for continuous professional development	1	1	-	-
<b>PC14.</b> formulate a professional development plan to enhance capabilities	2	1	-	-
<b>PC15.</b> build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations	1	1	-	-
<b>PC16.</b> examine developments and trends in field of work and their potential impact on work	1	1	-	-
<b>PC17.</b> take feedback from peers, supervisors and clients to improve own performance and practices	1	1	-	-
<i>Work in a disciplined and ethical manner</i>	<b>11</b>	<b>16</b>	-	-
<b>PC18.</b> perform tasks as per workplace standards, organisational policies and legislative requirements	2	2	-	-
<b>PC19.</b> display appropriate professional appearance at the workplace and adhere to the organisational dress code	1	2	-	-
<b>PC20.</b> 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	-	-
<b>PC21.</b> 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	-	-
<b>PC22.</b> protect the rights of the client and organisation when delivering services	1	2	-	-
<b>PC23.</b> ensure services are delivered equally to all clients regardless of personal and cultural beliefs	1	2	-	-
<b>PC24.</b> operate within an agreed ethical code of practice and report unethical conduct to the appropriate authorities	2	2	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC25.</b> follow organisational guidelines and legal requirements on disclosure and confidentiality	1	2	-	-
<i>Uphold social diversity at the workplace</i>	<b>10</b>	<b>11</b>	-	-
<b>PC26.</b> recognize and evaluate biased practices against underrepresented groups like women and persons with disabilities, in workplace systems and processes	2	2	-	-
<b>PC27.</b> identify and report discrimination and harassment based on gender, disability, or cultural difference at the workplace	2	2	-	-
<b>PC28.</b> use inclusive or neutral language and gestures in all interactions	2	2	-	-
<b>PC29.</b> respect the personal and professional space of others	2	2	-	-
<b>PC30.</b> access grievance redressal mechanisms as per legislations	2	3	-	-
<b>NOS Total</b>	<b>40</b>	<b>60</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ELE/N9905
<b>NOS Name</b>	Work effectively at the workplace
<b>Sector</b>	Electronics
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic - Organizational Behaviour
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	24/02/2022
<b>Next Review Date</b>	02/06/2025
<b>NSQC Clearance Date</b>	24/02/2022

## **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 l
- PC12.** exhibit rescue and first-aid techniques in case of fire or electrocution

## Qualification Pack

### *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

## Qualification Pack

- 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, CO<sub>2</sub>, 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





## Qualification Pack

- 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

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Deal with workplace hazards</i>	<b>20</b>	<b>31</b>	-	-
<b>PC1.</b> identify job-site hazards and possible causes of accident in the workplace	2	3	-	-
<b>PC2.</b> 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	-	-
<b>PC3.</b> 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	-	-
<b>PC4.</b> follow standard safety procedures while handling tool/ ,equipment, hazardous substances and while working in hazardous environments	3	4	-	-
<b>PC5.</b> 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	-	-
<b>PC6.</b> avoid damage of components due to negligence in electrostatic discharge (ESD) procedures	2	3	-	-
<b>PC7.</b> 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	-	-
<b>PC8.</b> maintain appropriate posture while handling heavy objects	1	3	-	-
<b>PC9.</b> apply good housekeeping practices at all times	2	3	-	-
<i>Apply fire safety practices</i>	<b>4</b>	<b>9</b>	-	-
<b>PC10.</b> take preventive measures to prevent fire hazards	2	3	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<p><b>PC11.</b></p> <ul style="list-style-type: none"> <li>• use appropriate fire extinguishers for different types of fires</li> <li>• 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 l</li> </ul>	1	3	-	-
<p><b>PC12.</b> exhibit rescue and first-aid techniques in case of fire or electrocution</p>	1	3	-	-
<p><i>Follow emergencies, rescue and first-aid procedures</i></p>	<b>6</b>	<b>13</b>	-	-
<p><b>PC13.</b> administer appropriate first aid to victims in case of bleeding, burns, choking, electric shock, poisoning etc.</p>	1	3	-	-
<p><b>PC14.</b> administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock,</p>	1	2	-	-
<p><b>PC15.</b> 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</p>	2	4	-	-
<p><b>PC16.</b> use correct method to move injured people and others during an emergency</p>	2	4	-	-
<p><i>Effective waste management/recycling practices</i></p>	<b>5</b>	<b>12</b>	-	-
<p><b>PC17.</b> identify recyclable and non-recyclable, and hazardous waste generated</p>	1	3	-	-
<p><b>PC18.</b> segregate waste into different categories</p>	1	2	-	-
<p><b>PC19.</b> ensure disposal of non-recyclable waste appropriately</p>	1	2	-	-
<p><b>PC20.</b> deposit non-recyclable and reusable material at identified location</p>	1	3	-	-



### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC21. follow processes specified for disposal of hazardous waste	1	2	-	-
<b>NOS Total</b>	<b>35</b>	<b>65</b>	-	-

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ELE/N1002
<b>NOS Name</b>	Apply health and safety practices at the workplace
<b>Sector</b>	Electronics
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic - Health Safety
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	3.0
<b>Last Reviewed Date</b>	24/02/2022
<b>Next Review Date</b>	02/06/2025
<b>NSQC Clearance Date</b>	24/02/2022

## Qualification Pack

### ELE/N3153: Install laptop and its peripherals

#### Description

This OS unit is about installing a laptop and its peripherals as per the customer requirements.

#### Scope

The scope covers the following :

- Install the laptop
- Install the laptop peripherals
- Test the laptop and peripherals
- Educate the customer

#### Elements and Performance Criteria

##### *Install the laptop*

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

- PC1.** remove all packaging/ cover from the laptop and its accessories and place the laptop at an appropriate spot
- PC2.** install the battery in the laptop as per the installation manual and connect the network as required
- PC3.** connect the power cable with the relevant port on the laptop ensuring no damage to the port and switch on the laptop
- PC4.** install a compatible Operating System (OS) as per the developer's instructions
- PC5.** install other relevant computer software/ applications as per the customer requirements
- PC6.** dock the laptop on a docking station as per the customer's requirement
- PC7.** follow the relevant health and safety standards during the installation process
- PC8.** complete the installation within the agreed Turn-around Time (TAT)

##### *Install the laptop peripherals*

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

- PC9.** determine the compatibility of the relevant peripherals such as printer and scanner with the laptop
- PC10.** identify the appropriate spot(s) for the installation of peripheral(s)
- PC11.** connect the peripherals with the laptop as per the SOP
- PC12.** install the peripherals and relevant software/ drivers as per the manufacturer's instructions

##### *Test the laptop and peripherals*

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

- PC13.** test the laptop and peripherals for correct functioning after the installation is complete
- PC14.** perform troubleshooting for any issues encountered with the laptop
- PC15.** co-ordinate with the relevant personnel for resolving any complex issues

##### *Educate the customer*

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

## Qualification Pack

- PC16.** explain the laptop use, common troubleshooting, maintenance processes and precautions to the customer
- PC17.** answer the customer queries regarding the use of laptop and peripherals
- PC18.** explain the warranty cover for the laptop and its peripherals
- PC19.** carry out documentation as per the organisational policy

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** various hardware and software used in a laptop
- KU2.** formation of Alternating Current (AC)/ Direct Current (DC)
- KU3.** the symbol and denoting letter for a resistor
- KU4.** colour coding of solid type resistor
- KU5.** coding of Surface Mounting Device (SMD) type resistor
- KU6.** the process of value measurement using a multimeter and SMD Tester
- KU7.** the function of a solid type and SMD type capacitor
- KU8.** the process of testing of a capacitor using a multimeter and SMD Tester
- KU9.** how to measure the value on an SMD Tester
- KU10.** the function, symbol and denoting letter for the electromagnetic coil
- KU11.** the types and properties of coil material
- KU12.** how to identify solid and SMD type and pack coil
- KU13.** the process of testing electromagnetic coils
- KU14.** the function, symbol and denoting letter for the identification of solid and SMD-type diode
- KU15.** the process of testing different types of diode
- KU16.** difference anode and cathode
- KU17.** the types, symbol and denoting letter for Positive-Negative-Positive (PNP) and Negative-Positive- Negative (NPN) concept
- KU18.** the process of testing a transistor
- KU19.** design and function of a Metal Oxide Semiconductor Field Effect Transistor (MOSFET)
- KU20.** different types of transformer such as step-up transformer, step-down transformer, etc.
- KU21.** various types of laptop, their technical specifications and compatible operating systems
- KU22.** solutions for common problems encountered while installing software and applications on a laptop
- KU23.** different laptop hardware such as CPU fan, motherboard, power unit, RAM, hard disk, etc.
- KU24.** the installation procedure for various laptop hardware and software
- KU25.** safety precautions to be taken during the installation of a laptop
- KU26.** how to operate a laptop and its peripherals
- KU27.** the process of docking a laptop and its advantages
- KU28.** the process for identifying common faults with the laptop hardware
- KU29.** different types of laptop peripherals, their functions and standard installation procedure

## Qualification Pack

- KU30.** settings of various laptop software/ applications
- KU31.** voltage and power requirement of a laptop
- KU32.** operations of various laptop peripherals
- KU33.** functions of various electrical and mechanical parts/ modules of a laptop
- KU34.** the concept of quartz, clock and pulse, measuring unit, etc.

## Generic Skills (GS)

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

- GS1.** communicate clearly and politely
- GS2.** prepare work-related documents
- GS3.** read the relevant guides, manuals, policies and regulations
- GS4.** listen attentively to understand the issue(s) the customer is facing
- GS5.** suggest an appropriate solution to the customer after evaluating all the possible solutions
- GS6.** plan and schedule various tasks work for efficient time-management
- GS7.** identify solutions to persistent problems through discussion with co-workers and Subject Matter Experts (SMEs)
- GS8.** take preventive action within own limits of authority to deal with possible disruptions to work
- GS9.** take quick decisions to deal with workplace emergencies/ accidents



## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Install the laptop</i>	<b>12</b>	<b>20</b>	-	<b>7</b>
<b>PC1.</b> remove all packaging/ cover from the laptop and its accessories and place the laptop at an appropriate spot	-	-	-	-
<b>PC2.</b> install the battery in the laptop as per the installation manual and connect the network as required	-	-	-	-
<b>PC3.</b> connect the power cable with the relevant port on the laptop ensuring no damage to the port and switch on the laptop	-	-	-	-
<b>PC4.</b> install a compatible Operating System (OS) as per the developer's instructions	-	-	-	-
<b>PC5.</b> install other relevant computer software/ applications as per the customer requirements	-	-	-	-
<b>PC6.</b> dock the laptop on a docking station as per the customer's requirement	-	-	-	-
<b>PC7.</b> follow the relevant health and safety standards during the installation process	-	-	-	-
<b>PC8.</b> complete the installation within the agreed Turn-around Time (TAT)	-	-	-	-
<i>Install the laptop peripherals</i>	<b>12</b>	<b>18</b>	-	<b>4</b>
<b>PC9.</b> determine the compatibility of the relevant peripherals such as printer and scanner with the laptop	-	-	-	-
<b>PC10.</b> identify the appropriate spot(s) for the installation of peripheral(s)	-	-	-	-
<b>PC11.</b> connect the peripherals with the laptop as per the SOP	-	-	-	-
<b>PC12.</b> install the peripherals and relevant software/ drivers as per the manufacturer's instructions	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Test the laptop and peripherals</i>	<b>2</b>	<b>9</b>	-	<b>2</b>
<b>PC13.</b> test the laptop and peripherals for correct functioning after the installation is complete	-	-	-	-
<b>PC14.</b> perform troubleshooting for any issues encountered with the laptop	-	-	-	-
<b>PC15.</b> co-ordinate with the relevant personnel for resolving any complex issues	-	-	-	-
<i>Educate the customer</i>	<b>4</b>	<b>8</b>	-	<b>2</b>
<b>PC16.</b> explain the laptop use, common troubleshooting, maintenance processes and precautions to the customer	-	-	-	-
<b>PC17.</b> answer the customer queries regarding the use of laptop and peripherals	-	-	-	-
<b>PC18.</b> explain the warranty cover for the laptop and its peripherals	-	-	-	-
<b>PC19.</b> carry out documentation as per the organisational policy	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>55</b>	-	<b>15</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ELE/N3153
<b>NOS Name</b>	Install laptop and its peripherals
<b>Sector</b>	Electronics
<b>Sub-Sector</b>	Consumer Electronics & IT Hardware
<b>Occupation</b>	After Sales Service
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/12/2021
<b>Next Review Date</b>	30/12/2026
<b>NSQC Clearance Date</b>	30/12/2021

## **ELE/N3154: Carry out repair and maintenance of laptop and its peripherals**

### **Description**

This OS unit is about diagnosing and rectifying issues with a laptop and its peripherals.

### **Scope**

The scope covers the following :

- Identify problems with the laptop and its peripherals
- Carry out repair and maintenance
- Comply with the quality standards
- Invoice the customer and take feedback

### **Elements and Performance Criteria**

#### *Identify problems with the laptop and its peripherals*

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

- PC1.** discuss the issue with the customer to understand the problem with the laptop
- PC2.** conduct the necessary tests on the laptop to identify whether it is experiencing software or hardware issues
- PC3.** use the relevant diagnostic tools such as a multimeter and Power-On Self-Test (POST) card to detect issues with various modules/ components
- PC4.** identify issues with various modules such as High-Definition Multimedia Interface (HDMI), Local Area Network (LAN), Read-Only Memory (ROM), etc.
- PC5.** determine the repair/ replacement requirements
- PC6.** check if the faulty module/ component has active warranty coverage
- PC7.** assess whether the repair/ replacement can be carried out at the customer premises or the laptop will need to be carried to the workshop
- PC8.** explain the procedure and relevant costs to the customer

#### *Carry out repair and maintenance*

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

- PC9.** organise the necessary tools, equipment and spare parts for repair and maintenance
- PC10.** create a back-up of laptop data to prevent data loss during repair and maintenance
- PC11.** disassemble the laptop as per the service manual after switching it off
- PC12.** carry out repair or replacement using the manufacturer-approved tools, equipment and spare parts
- PC13.** assemble the laptop as per the manufacturer's instructions after carrying out repair and maintenance
- PC14.** carry out repair and maintenance of the relevant laptop peripherals
- PC15.** explain the general troubleshooting steps to the customer
- PC16.** apply the business code of conduct while dealing with the customer

## Qualification Pack

**PC17.** comply with the relevant health and safety standards

*Comply with the quality standards*

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

**PC18.** carry out a repair/replacement activities within the Turn Around Time (TAT) given to the customer

**PC19.** escalate out of authority issues to the relevant authority in a timely manner

**PC20.** prepare work-report and relevant documents for the repair and maintenance services

*Invoice the customer and take feedback*

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

**PC21.** apply the relevant benefits in the invoice as per the warranty coverage

**PC22.** explain the warranty and subsequent repair and maintenance policy to the customer

**PC23.** process payment as per the organisational policy

**PC24.** maintain the record of payment

**PC25.** obtain customer feedback to identify any improvement needs

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** relevant documentation requirements in the job role

**KU2.** use of a multimeter and other relevant devices to identify issues with various types of circuit i.e. VRM Circuit, RAM Supply Circuit, Step Down Circuit, Battery Charging and Discharging Circuit, Clock Generator Circuit, Fan Controller Circuit, USB Supply and Data Circuit, SATA Supply and Data Circuit, CPU Thermal Circuit, North/ South Bridge Supply Circuit, Graphics Chip Circuit, Keyboard and Touchpad Circuit, Keyboard and Touchpad Circuit, Input-Output Controller Chip Connection Circuit

**KU3.** various types of electrical and mechanical modules used in a computer

**KU4.** basics of electronics and computers i.e. AC/DC, Resistor, Capacitor, Coil, Transistor, MOSFET, Crystal and IC)

**KU5.** repair and maintenance needs of different types of laptop hardware and peripherals

**KU6.** relevant tools, equipment and spare parts required for repair and maintenance of laptop hardware and peripherals

**KU7.** standard procedure for disassembling and reassembling different types of laptop hardware and peripherals

**KU8.** different types of computer modules such as an Adapter, LCD TFT, Battery, RAM, Keyboard/Touchpad etc.

**KU9.** the hazard of Electrostatic Discharge (ESD) and the appropriate measures protect from it

## Generic Skills (GS)

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

**GS1.** prepare work-related documents

**GS2.** read the relevant literature to keep abreast with the latest developments in the field of work



## Qualification Pack

- GS3.** communicate professionally with customers and co-workers
- GS4.** listen attentively to comprehend the information or instructions being given
- GS5.** plan and schedule tasks to ensure timely completion
- GS6.** take quick decisions to minimise the impact on productivity due to any disruptions
- GS7.** co-ordinate with the co-workers to achieve the work objectives

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify problems with the laptop and its peripherals</i>	<b>12</b>	<b>20</b>	-	<b>6</b>
<b>PC1.</b> discuss the issue with the customer to understand the problem with the laptop	-	-	-	-
<b>PC2.</b> conduct the necessary tests on the laptop to identify whether it is experiencing software or hardware issues	-	-	-	-
<b>PC3.</b> use the relevant diagnostic tools such as a multimeter and Power-On Self-Test (POST) card to detect issues with various modules/ components	-	-	-	-
<b>PC4.</b> identify issues with various modules such as High-Definition Multimedia Interface (HDMI), Local Area Network (LAN), Read-Only Memory (ROM), etc.	-	-	-	-
<b>PC5.</b> determine the repair/ replacement requirements	-	-	-	-
<b>PC6.</b> check if the faulty module/ component has active warranty coverage	-	-	-	-
<b>PC7.</b> assess whether the repair/ replacement can be carried out at the customer premises or the laptop will need to be carried to the workshop	-	-	-	-
<b>PC8.</b> explain the procedure and relevant costs to the customer	-	-	-	-
<i>Carry out repair and maintenance</i>	<b>12</b>	<b>20</b>	-	<b>5</b>
<b>PC9.</b> organise the necessary tools, equipment and spare parts for repair and maintenance	-	-	-	-
<b>PC10.</b> create a back-up of laptop data to prevent data loss during repair and maintenance	-	-	-	-
<b>PC11.</b> disassemble the laptop as per the service manual after switching it off	-	-	-	-
<b>PC12.</b> carry out repair or replacement using the manufacturer-approved tools, equipment and spare parts	-	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> assemble the laptop as per the manufacturer's instructions after carrying out repair and maintenance	-	-	-	-
<b>PC14.</b> carry out repair and maintenance of the relevant laptop peripherals	-	-	-	-
<b>PC15.</b> explain the general troubleshooting steps to the customer	-	-	-	-
<b>PC16.</b> apply the business code of conduct while dealing with the customer	-	-	-	-
<b>PC17.</b> comply with the relevant health and safety standards	-	-	-	-
<i>Comply with the quality standards</i>	<b>2</b>	<b>10</b>	-	<b>2</b>
<b>PC18.</b> carry out a repair/replacement activities within the Turn Around Time (TAT) given to the customer	-	-	-	-
<b>PC19.</b> escalate out of authority issues to the relevant authority in a timely manner	-	-	-	-
<b>PC20.</b> prepare work-report and relevant documents for the repair and maintenance services	-	-	-	-
<i>Invoice the customer and take feedback</i>	<b>4</b>	<b>5</b>	-	<b>2</b>
<b>PC21.</b> apply the relevant benefits in the invoice as per the warranty coverage	-	-	-	-
<b>PC22.</b> explain the warranty and subsequent repair and maintenance policy to the customer	-	-	-	-
<b>PC23.</b> process payment as per the organisational policy	-	-	-	-
<b>PC24.</b> maintain the record of payment	-	-	-	-
<b>PC25.</b> obtain customer feedback to identify any improvement needs	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>55</b>	-	<b>15</b>



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ELE/N3154
<b>NOS Name</b>	Carry out repair and maintenance of laptop and its peripherals
<b>Sector</b>	Electronics
<b>Sub-Sector</b>	Consumer Electronics & IT Hardware
<b>Occupation</b>	After Sales Service
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/12/2021
<b>Next Review Date</b>	30/12/2026
<b>NSQC Clearance Date</b>	30/12/2021

## 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).

## Qualification Pack

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/N4601.Evaluate the customer requirements and computer issues	30	55	-	15	100	30
ELE/N3155.Install the desktop computer and its peripherals	30	55	-	15	100	20
ELE/N4603.Carry out repair and maintenance of a desktop computer and its peripherals	30	55	-	15	100	30
ELE/N9905.Work effectively at the workplace	40	60	-	-	100	5
ELE/N1002.Apply health and safety practices at the workplace	35	65	-	-	100	15
<b>Total</b>	<b>165</b>	<b>290</b>	<b>-</b>	<b>45</b>	<b>500</b>	<b>100</b>

Optional: 1 Laptop and its peripherals



### Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ELE/N3153.Install laptop and its peripherals	30	55	-	15	100	25
ELE/N3154.Carry out repair and maintenance of laptop and its peripherals	30	55	-	15	100	25
<b>Total</b>	<b>60</b>	<b>110</b>	<b>0</b>	<b>30</b>	<b>200</b>	<b>50</b>



## Acronyms

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

## Qualification Pack

### Glossary

<b>Sector</b>	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.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
<b>Job role</b>	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
<b>Occupational Standards (OS)</b>	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.
<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standards (NOS)</b>	NOS are occupational standards which apply uniquely in the Indian context.
<b>Qualifications Pack (QP)</b>	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.
<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	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.
<b>Scope</b>	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

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<b>Knowledge and Understanding (KU)</b>	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.
<b>Organisational Context</b>	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.
<b>Technical Knowledge</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (GS)</b>	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.
<b>Electives</b>	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.
<b>Options</b>	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.