



# Field Engineer RACW

QP Code: ELE/Q3105

Version: 2.0

NSQF Level: 5

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## Qualification Pack

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## Qualification Pack

### ELE/Q3105: Field Engineer RACW

#### Brief Job Description

The individual interacts with customers to install the appliance, diagnose the problem to assess possible causes of malfunction, rectifies minor problems, and replaces faulty modules for failed parts or recommends factory repairs for bigger faults.

#### Personal Attributes

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

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

- [1. ELE/N3101: Engage with customer for service](#)
- [2. ELE/N3112: Perform installation and repair of refrigerator](#)
- [3. ELE/N3114: Perform installation and repair of air conditioners](#)
- [4. ELE/N3116: Perform installation and repair of washing machine](#)
- [5. ELE/N9905: Work effectively at the workplace](#)
- [6. ELE/N1002: Apply health and safety practices at the workplace](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Electronics
<b>Sub-Sector</b>	Consumer Electronics & IT Hardware
<b>Occupation</b>	After Sales Service
<b>Country</b>	India
<b>NSQF Level</b>	5
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/NIL

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<b>Minimum Educational Qualification &amp; Experience</b>	Diploma ((Electrical or Electronics Engineering) with 2 Years of Relevant experience) OR B.E./B.Tech (Degree in Electrical or Electronics Engineering) OR Certificate (NSQF Level-4 in Field Technician - Air Conditioner with 2 years of relevant Experience)
<b>Minimum Level of Education for Training in School</b>	Not Applicable
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	27/01/2022
<b>Next Review Date</b>	02/06/2025
<b>Deactivation Date</b>	02/06/2025
<b>NSQC Approval Date</b>	27/01/2022
<b>Version</b>	2.0
<b>Reference code on NQR</b>	2022/EHW/ESSC/05112
<b>NQR Version</b>	1.0

**Remarks:**

NA

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### ELE/N3101: Engage with customer for service

#### Description

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

#### Scope

The scope covers the following :

- Interact with customer
- Suggest possible solutions

#### Elements and Performance Criteria

##### *Interacting with customer*

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

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

##### *Suggest possible solutions*

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

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

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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



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

### Generic Skills (GS)

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

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

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### Assessment Criteria

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



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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ELE/N3101
<b>NOS Name</b>	Engage with customer for service
<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>	2.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	02/06/2025
<b>NSQC Clearance Date</b>	27/01/2022

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### ELE/N3112: Perform installation and repair of refrigerator

#### Description

This NOS unit is about installation of newly purchased refrigerator at customer location and repair in case of any dysfunction.

#### Scope

The scope covers the following :

- This unit/ task covers the following:
- Prepare for installation of refrigerator
- Install refrigerator at customer location
- Diagnose, repair and replace the dysfunctional module of refrigerator
- Complete documentation
- Coordinate with others w.r.t. installation and repair

#### Elements and Performance Criteria

##### *Prepare for installation of refrigerator*

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

- PC1.** identify work requirement from superior on regular basis
- PC2.** visit customer location as scheduled
- PC3.** provide guidance to the customer for pre-installation requirement as per the appliance w.r.t platform for placing the appliance, plug point, etc.
- PC4.** remove the packaging from the appliance delivered at the customer location
- PC5.** verify that the product matches the customer's order in terms of colour, model etc. with all supporting accessories
- PC6.** check the availability of all tools and fitments for the installation
- PC7.** clear up the packaging material waste and dispose as per company's norms
- PC8.** seek customer's input on placing/positioning the appliance near a plug point, in obstruction-free area, while maintaining the required distance from wall and floor

##### *Install refrigerator at customer location*

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

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

##### *Diagnose, repair and replace the dysfunctional module of refrigerator*

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

- PC13.** verify thermostat settings to ensure they are as required

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- PC14.** diagnose the fault based on customer interaction, usage pattern and initial inspection
- PC15.** unplug the appliance to carry out further inspection
- PC16.** perform basic tests such as power supply inspection, volt ampere test and earth test power supply
- PC17.** inspect every module of the unit separately if the fault is not identified through basic tests such as compressor, motors, PCB, condenser optimise the time taken to fix the dysfunctional refrigerator
- PC18.** send it to factory for in-depth diagnosis if problem does not get identified at site
- PC19.** repair/replace component at location, if the fault identified is due to damage of components
- PC20.** schedule next appointment if the part can't be replaced on site
- PC21.** reassemble the unit to check that all the modules of the unit are working as per specifications
- PC22.** demonstrate functionality of the unit to the customer
- PC23.** provide information to the customer about cleaning procedures and precautions to be taken in order to avoid recurrence of problem
- PC24.** sell related products such as new equipment or annual maintenance contracts (AMC) to the customer

### *Complete documentation*

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

- PC25.** fill in customer acknowledgement form and get it signed by customer, both in case of installation and repair
- PC26.** document the work completed on the company ERP software for tracking and inform customer care as well as supervisor about job completion
- PC27.** complete all documentation procedures for complaint closure
- PC28.** collect necessary payments from the customer and issue invoice accordingly

### *Coordinate with others w.r.t. installation and repair*

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

- PC29.** escalate customer issues and problems that are unresolved at field level, including queries on non-field service areas
- PC30.** interact with service technicians from time to time in order to understand problems faced on the field
- PC31.** provide training to junior level technicians about installation procedures, diagnosis procedures and customer handling

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** company's policy on product's warranty, sales, installation, after sales support policy and other terms and conditions
- KU2.** different types of refrigerators such as traditional, frost-free, peltier with all features and functionalities of various models
- KU3.** refrigerator manufacturing capabilities of the organisation, models of the company and their respective features

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- KU4.** installation-site requirements such as structural requirements, ventilation, etc.
- KU5.** damage free handling of the unit
- KU6.** refrigeration cycle and functioning of the appliance and its various modules, including various electromechanical parts of the refrigerator
- KU7.** method of refrigeration, its use and functioning of refrigerator sealed system
- KU8.** types of refrigerants such as R12, R22, R134a, R290, R600a, R410, R32, use of different brazing sticks, types of brazing torches, fluxes and their application
- KU9.** manual-based procedure of installing the refrigerators
- KU10.** methods of fixing various accessories, parts that have accompanied the unit and their features
- KU11.** how to use the appliance and its various features/functionalities after installation
- KU12.** use of test equipment and tools such as multi-meter, oscilloscope etc.
- KU13.** safety precautions/rules, policies, procedures and quality standards to be followed
- KU14.** fundamentals of electricity such as ohms law, difference between ac and dc, understanding of domestic wiring, understanding of series and parallel connections
- KU15.** how to rectify so as to avoid repeat fault in the refrigerator
- KU16.** selection of appropriate spares for replacement
- KU17.** basic knowledge of components such as diode, transformer, LED, photo transistor, capacitor, thermistor ICs etc.
- KU18.** components/modules of refrigerators and their prices
- KU19.** packaging waste disposal procedures
- KU20.** refrigerator energy ratings such as BEE rating
- KU21.** troubleshooting knowledge with respect to refrigerators
- KU22.** hazards, their causes and prevention/personal safety
- KU23.** frequently occurring faults such as noise, water dripping and insufficient cooling, their causes and solutions
- KU24.** other products of the company

## Generic Skills (GS)

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

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



- GS11.** improve work processes
- GS12.** ensure customer satisfaction
- GS13.** work effectively to achieve daily target

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation of refrigerator</i>	<b>12</b>	<b>12</b>	-	<b>1</b>
<b>PC1.</b> identify work requirement from superior on regular basis	2	1	-	-
<b>PC2.</b> visit customer location as scheduled	1	-	-	-
<b>PC3.</b> provide guidance to the customer for pre-installation requirement as per the appliance w.r.t platform for placing the appliance, plug point, etc.	2	-	-	-
<b>PC4.</b> remove the packaging from the appliance delivered at the customer location	2	2	-	-
<b>PC5.</b> verify that the product matches the customer's order in terms of colour, model etc. with all supporting accessories	-	4	-	-
<b>PC6.</b> check the availability of all tools and fitments for the installation	3	3	-	-
<b>PC7.</b> clear up the packaging material waste and dispose as per company's norms	-	2	-	-
<b>PC8.</b> seek customer's input on placing/positioning the appliance near a plug point, in obstruction-free area, while maintaining the required distance from wall and floor	2	-	-	1
<i>Install refrigerator at customer location</i>	<b>5</b>	<b>5</b>	-	<b>1</b>
<b>PC9.</b> perform steps to fit water-disposal beaker, handle, shelves, basket and side buckets	1	2	-	-
<b>PC10.</b> connect the refrigerator to power supply and set cooling/freezer temperature knobs according to the season so as to demonstrate features/utility	1	3	-	1
<b>PC11.</b> inform the customer about the precautions to be taken while using the refrigerator and heating of outside walls of the refrigerator	1	-	-	-
<b>PC12.</b> explain maintenance procedures to be followed while using the refrigerator	2	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Diagnose, repair and replace the dysfunctional module of refrigerator</i>	<b>11</b>	<b>16</b>	-	<b>6</b>
<b>PC13.</b> verify thermostat settings to ensure they are as required	-	1	-	-
<b>PC14.</b> diagnose the fault based on customer interaction, usage pattern and initial inspection	1	1	-	1
<b>PC15.</b> unplug the appliance to carry out further inspection	1	1	-	-
<b>PC16.</b> perform basic tests such as power supply inspection, volt ampere test and earth test power supply	1	3	-	1
<b>PC17.</b> inspect every module of the unit separately if the fault is not identified through basic tests such as compressor, motors, PCB, condenser optimise the time taken to fix the dysfunctional refrigerator	1	3	-	1
<b>PC18.</b> send it to factory for in-depth diagnosis if problem does not get identified at site	1	-	-	-
<b>PC19.</b> repair/replace component at location, if the fault identified is due to damage of components	1	2	-	-
<b>PC20.</b> schedule next appointment if the part can't be replaced on site	1	-	-	-
<b>PC21.</b> reassemble the unit to check that all the modules of the unit are working as per specifications	1	2	-	1
<b>PC22.</b> demonstrate functionality of the unit to the customer	-	2	-	1
<b>PC23.</b> provide information to the customer about cleaning procedures and precautions to be taken in order to avoid recurrence of problem	1	-	-	-
<b>PC24.</b> sell related products such as new equipment or annual maintenance contracts (AMC) to the customer	2	1	-	1
<i>Complete documentation</i>	<b>5</b>	<b>7</b>	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC25.</b> fill in customer acknowledgement form and get it signed by customer, both in case of installation and repair	2	2	-	-
<b>PC26.</b> document the work completed on the company ERP software for tracking and inform customer care as well as supervisor about job completion	1	3	-	-
<b>PC27.</b> complete all documentation procedures for complaint closure	1	2	-	-
<b>PC28.</b> collect necessary payments from the customer and issue invoice accordingly	1	-	-	-
<i>Coordinate with others w.r.t. installation and repair</i>	<b>7</b>	<b>10</b>	-	<b>2</b>
<b>PC29.</b> escalate customer issues and problems that are unresolved at field level, including queries on non-field service areas	2	2	-	-
<b>PC30.</b> interact with service technicians from time to time in order to understand problems faced on the field	2	4	-	1
<b>PC31.</b> provide training to junior level technicians about installation procedures, diagnosis procedures and customer handling	3	4	-	1
<b>NOS Total</b>	<b>40</b>	<b>50</b>	-	<b>10</b>



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ELE/N3112
<b>NOS Name</b>	Perform installation and repair of refrigerator
<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>	3.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	02/06/2025
<b>NSQC Clearance Date</b>	27/01/2022

## **ELE/N3114: Perform installation and repair of air conditioners**

### **Description**

This NOS is about understanding the installation or repair requirements for air conditioners, perform the tasks at customer premises to achieve the required productivity and quality.

### **Scope**

The scope covers the following :

- This unit/task covers the following:
- Perform pre-installation checks
- Install the air conditioner
- Analyze symptoms, identify and rectify faults
- Complete documentation

### **Elements and Performance Criteria**

#### *Perform pre-installation checks*

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

- PC1.** analyze the work requirements by interacting with the supervisor
- PC2.** plan to visit customer premises to understand the installation position of air conditioner such as window, split, high, low, etc
- PC3.** check that the location meets structural requirements such as distance from power supply, distance from windows/doors being opened frequently
- PC4.** inform customer about any pre installations/masonry/electrical work to be carried out
- PC5.** mark position for placement of indoor/outdoor units to get customer confirmation on position and installation on next visit

#### *Install the air conditioner*

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

- PC6.** remove the air conditioner packaging without causing any damage and ensure that it matches the customer order in terms of colour
- PC7.** check that all supporting accessories are available in the pack
- PC8.** inspect that tools and fitments required for the installation are available
- PC9.** dispose off the packaging material waste as per company's norms
- PC10.** measure the location to drill holes ensuring that no internal wiring damage takes place
- PC11.** mount the indoor unit and ensure that the screws are fastened securely
- PC12.** place the outdoor unit at a suitable location and attach it firmly to wall/floor
- PC13.** connect the indoor and the outdoor units using the field copper pipe of appropriate size and interconnecting cables
- PC14.** fill in additional gas if the distance between the indoor and the outdoor units is more than what is recommended

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- PC15.** align the air conditioner as per the instructions manual and make necessary power supply connections
- PC16.** demonstrate the features/utility to customer for the new installation while explaining the precautions to be taken while using the air conditioner

### *Analyze symptoms, identify and rectify faults*

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

- PC17.** analyze usage pattern of the air conditioner from the customer
- PC18.** diagnose the fault based on customer interaction and initial inspection by carrying out basic tests such as power supply inspection, volt ampere test, etc.
- PC19.** separate and inspect every module of the unit if the fault is not identified through basic tests
- PC20.** plan to send air conditioner to factory for in-depth diagnosis, if problem cannot be identified at site
- PC21.** repair or replace faulty part as per requirement at customer location or send it to service center on time in case immediate repair is not possible for specialized parts such as PCB
- PC22.** plan second visit to replace dysfunctional module/part after collecting it from service center
- PC23.** carry out brazing operation at the customer premise or pass the complaint on to a specialist in-charge of handling brazing, if the fault identified is a gas leak
- PC24.** reassemble the unit after rectifying identified fault
- PC25.** check that all the modules of the unit work as per specifications and confirm functionality to the customer
- PC26.** collect necessary payment from the customer as per rate sheet/ communication from customer care and provide the receipt

### *Complete documentation*

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

- PC27.** fill in customer acknowledgement form and seek customer's signature
- PC28.** complete documentation for recording installation/repair of air conditioner and update the company ERP software for tracking/future references
- PC29.** inform customer care and supervisor about job completion

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** safety rules, policies, procedures and quality standards to be followed
- KU2.** installation-site requirements such as structural requirements, ventilation, etc.
- KU3.** manual-based procedure of installing the air conditioner
- KU4.** how to fix various accessories and parts that have accompanied the unit
- KU5.** how to operate tools such as screw drivers, electric drill for installation
- KU6.** packaging waste disposal procedures
- KU7.** how to operate the air conditioner and use the various features
- KU8.** method of air conditioning, its use and functioning of sealed system
- KU9.** troubleshooting knowledge with respect to air conditioners

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- KU10.** frequently occurring faults such as poor/no cooling, noisy unit, condensation water over flowing and basic electrical faults such as improper/no earthing, defective power cord, etc
- KU11.** basic electrical and mechanical modules of air conditioner
- KU12.** usage of test equipment and tools such as multi-meter, oscilloscope, temperature meter, pressure gauges, etc.
- KU13.** how to detect defects in the compressor, condenser and other problems such as improper alignment of unit, low refrigerant charge, etc along with their reasons
- KU14.** how to diagnose reasons for improper cooling by diagnosing causes such as dirty filter, blocked coil, bent fins, improper damper setting, low capacity of unit, etc.
- KU15.** fundamentals of electricity such as ohms law, difference between ac and dc, etc., basic electronic components such as diode, transformer, LED, photo transistor, etc., electrical and electronic symbols, multiples and SI units
- KU16.** basics of types of refrigerants such as R12, R22, R134a, R290, R600a, R410, R32
- KU17.** use of different brazing sticks, types of brazing torches, types of fluxes and their application
- KU18.** how to document completion note for customer
- KU19.** how to record completion information in the ERP system

## Generic Skills (GS)

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

- GS1.** read and comprehend documentation
- GS2.** communicate with the customer in a polite and courteous manner
- GS3.** anticipate and avoid hazards that may occur while carrying out the work
- GS4.** how to operate computers and software installed
- GS5.** work effectively to reduce repetition of errors
- GS6.** improve work processes
- GS7.** write in local/English language clearly
- GS8.** co-ordinate with different departments as per the requirement

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform pre-installation checks</i>	<b>10</b>	<b>7</b>	-	<b>1</b>
<b>PC1.</b> analyze the work requirements by interacting with the supervisor	2	1	-	-
<b>PC2.</b> plan to visit customer premises to understand the installation position of air conditioner such as window, split, high, low, etc	2	1	-	-
<b>PC3.</b> check that the location meets structural requirements such as distance from power supply, distance from windows/doors being opened frequently	2	2	-	1
<b>PC4.</b> inform customer about any pre installations/masonry/electrical work to be carried out	2	1	-	-
<b>PC5.</b> mark position for placement of indoor/outdoor units to get customer confirmation on position and installation on next visit	2	2	-	-
<i>Install the air conditioner</i>	<b>14</b>	<b>22</b>	-	<b>3</b>
<b>PC6.</b> remove the air conditioner packaging without causing any damage and ensure that it matches the customer order in terms of colour	1	2	-	-
<b>PC7.</b> check that all supporting accessories are available in the pack	2	2	-	1
<b>PC8.</b> inspect that tools and fitments required for the installation are available	2	2	-	1
<b>PC9.</b> dispose off the packaging material waste as per company's norms	1	2	-	-
<b>PC10.</b> measure the location to drill holes ensuring that no internal wiring damage takes place	2	2	-	-
<b>PC11.</b> mount the indoor unit and ensure that the screws are fastened securely	1	2	-	-
<b>PC12.</b> place the outdoor unit at a suitable location and attach it firmly to wall/floor	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> connect the indoor and the outdoor units using the field copper pipe of appropriate size and interconnecting cables	1	3	-	-
<b>PC14.</b> fill in additional gas if the distance between the indoor and the outdoor units is more than what is recommended	1	1	-	-
<b>PC15.</b> align the air conditioner as per the instructions manual and make necessary power supply connections	2	2	-	-
<b>PC16.</b> demonstrate the features/utility to customer for the new installation while explaining the precautions to be taken while using the air conditioner	2	2	-	1
<i>Analyze symptoms, identify and rectify faults</i>	<b>12</b>	<b>17</b>	-	<b>5</b>
<b>PC17.</b> analyze usage pattern of the air conditioner from the customer	2	2	-	-
<b>PC18.</b> diagnose the fault based on customer interaction and initial inspection by carrying out basic tests such as power supply inspection, volt ampere test, etc.	1	2	-	1
<b>PC19.</b> separate and inspect every module of the unit if the fault is not identified through basic tests	1	2	-	1
<b>PC20.</b> plan to send air conditioner to factory for in-depth diagnosis, if problem cannot be identified at site	1	1	-	-
<b>PC21.</b> repair or replace faulty part as per requirement at customer location or send it to service center on time in case immediate repair is not possible for specialized parts such as PCB	1	3	-	2
<b>PC22.</b> plan second visit to replace dysfunctional module/part after collecting it from service center	1	1	-	-
<b>PC23.</b> carry out brazing operation at the customer premise or pass the complaint on to a specialist in-charge of handling brazing, if the fault identified is a gas leak	1	2	-	1

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC24.</b> reassemble the unit after rectifying identified fault	2	2	-	-
<b>PC25.</b> check that all the modules of the unit work as per specifications and confirm functionality to the customer	1	1	-	-
<b>PC26.</b> collect necessary payment from the customer as per rate sheet/ communication from customer care and provide the receipt	1	1	-	-
<i>Complete documentation</i>	<b>4</b>	<b>4</b>	-	<b>1</b>
<b>PC27.</b> fill in customer acknowledgement form and seek customer's signature	2	1	-	-
<b>PC28.</b> complete documentation for recording installation/repair of air conditioner and update the company ERP software for tracking/future references	1	2	-	1
<b>PC29.</b> inform customer care and supervisor about job completion	1	1	-	-
<b>NOS Total</b>	<b>40</b>	<b>50</b>	-	<b>10</b>



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ELE/N3114
<b>NOS Name</b>	Perform installation and repair of air conditioners
<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>	2.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	02/06/2025
<b>NSQC Clearance Date</b>	27/01/2022

## Qualification Pack

### ELE/N3116: Perform installation and repair of washing machine

#### Description

This NOS unit is about installation of newly purchased appliance washing machine at customer location and repair in case of any dysfunction.

#### Scope

The scope covers the following :

- This unit/ task covers the following:
- Prepare for installation of washing machine
- Install washing machine at customer location
- Diagnose, repair and replace the faulty module of appliance
- Complete documentation
- Coordinate with others w.r.t. installation and repair

#### Elements and Performance Criteria

##### *Prepare for installation of washing machine*

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

- PC1.** identify work requirement from the superior
- PC2.** visit customer location as scheduled
- PC3.** provide guidance to the customer for pre-installation requirement as per the appliance w.r.t structure, plug point, drainage, plumbing etc.
- PC4.** remove the packaging from the appliance delivered at the customer location
- PC5.** verify that the product matches the customer's order in terms of colour, model etc. along with all supporting accessories
- PC6.** check the availability of all tools and fitments for the installation
- PC7.** clear up the packaging material waste and dispose as per company's norms
- PC8.** seek customer's input on placing/positioning the appliance near a plug point, in obstruction-free area, while maintaining the required distance from water tank
- PC9.** position the washing machine on appropriate platform as per location guidelines given in the installation manual

##### *Install washing machine at customer location*

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

- PC10.** remove all transport pins or anything lying in the drum of the washing machine before starting the machine
- PC11.** check the necessary plumbing installations required for water inlet and outlet
- PC12.** connect the machine's drain hose with the sewage pipe to ensure proper drainage
- PC13.** identify the water inlet valve in the household plumbing
- PC14.** ensure that the valve is turned off while connecting the PVC hose water inlet of the washing machine to the valve

## Qualification Pack

- PC15.** connect the waste water outlet from the washing machine to the waste system such that the dirty water does not get siphoned back into the washing machine
- PC16.** perform steps to make inlet, outlet and power supply connections securely using the correct tools and equipment for installation
- PC17.** operate and check that there are no leaks and the machine is in a safe and stable condition
- PC18.** educate the customer about switching off the unit during voltage fluctuations and use of voltage regulators, if necessary
- PC19.** provide information to the customer on proper operation and maintenance procedures

### *Diagnose, repair and replace the faulty module of appliance*

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

- PC20.** diagnose the fault based on customer interaction, usage pattern and initial inspection
- PC21.** unplug the appliance to carry out further inspection
- PC22.** perform basic tests such as power supply inspection, volt ampere test and earth test power supply
- PC23.** inspect every module of the unit separately if the fault is not identified through basic tests
- PC24.** send it to factory for in-depth diagnosis if problem does not get identified at site
- PC25.** repair/replace component at location, if the fault identified is due to damage of components
- PC26.** schedule next appointment if the part can't be replaced on site
- PC27.** reassemble the unit to check that all the modules of the unit are working as per specifications
- PC28.** demonstrate functionality of the unit to the customer
- PC29.** provide information to the customer about cleaning procedures and precautions to be taken in order to avoid recurrence of problem

### *Complete documentation*

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

- PC30.** fill in customer acknowledgement form and get it signed by customer, both in case of installation and repair
- PC31.** document the work completed on the company ERP software for tracking and inform customer care as well as supervisor about job completion
- PC32.** complete all documentation procedures for complaint closure
- PC33.** collect necessary payments from the customer and issue invoice accordingly

### *Coordinate with others w.r.t. installation and repair*

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

- PC34.** escalate customer issues and problems that are unresolved at field level, including queries on non-field service areas
- PC35.** interact with service technicians from time to time in order to understand problems faced on the field
- PC36.** provide training to junior level technicians about installation procedures, diagnosis procedures and customer handling

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

## Qualification Pack

- KU1.** company's policy on product's warranty, sales, installation, after sales support policy and other terms and conditions
- KU2.** installation site requirements (structural requirements, ventilation, etc.) with all safety precautions to be taken while installing washing machine
- KU3.** different types of washing machines such as front load and top load their features and functionalities
- KU4.** controls, features and functionalities of various washing machine models of the company
- KU5.** safety precautions/rules, policies, procedures and quality standards to be followed
- KU6.** manual-based procedure of installing the washing machine
- KU7.** methods of fixing various accessories, parts that have accompanied the washing machine
- KU8.** packaging waste disposal procedures
- KU9.** how to use the appliance and its various features/functionalities after installation
- KU10.** use of test equipment and tools such as multi-meter, oscilloscope etc.
- KU11.** damage free handling of the unit
- KU12.** different cycles in the machine running process and possible symptoms of faults in respective cycles
- KU13.** fundamentals of electricity such as ohms law, difference between ac and dc, understanding of domestic wiring, series and parallel connections
- KU14.** fundamentals of motors, types of motors and their working methods
- KU15.** basic knowledge of components such as diode, transformer, LED, photo transistor, capacitor, thermistor ICs etc. and functioning of components and parts such as solenoids and plungers
- KU16.** basics of gears, behaviour of gear mechanism, understanding of linear and angular movements, concepts such as rpm, torque etc.
- KU17.** types of switches such as thermal, mechanical, electronic, magnetic, electromagnetic, electromechanical, pressure optical and bimetal
- KU18.** troubleshooting knowledge with respect to washing machine
- KU19.** causes and solutions of faults common to all types of washing machines, faults specific to different models and frequently occurring faults such as noise, water not filling/over filling, water not draining
- KU20.** components/modules of the washing machine and their prices
- KU21.** hazards, their causes and prevention/personal safety
- KU22.** other products of the company

## Generic Skills (GS)

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

- GS1.** complete forms and other documentation
- GS2.** read and comprehend text material
- GS3.** listen carefully while interacting with others
- GS4.** communicate in local/regional/English language
- GS5.** interact with others in a polite and courteous manner
- GS6.** comply with applicable standard operating procedures



## Qualification Pack

- GS7.** communicate with all stakeholders to be able to work efficiently
- GS8.** seek inputs and guidance from the supervisor
- GS9.** maintain proper etiquette while dealing with the customer
- GS10.** interpret information clearly
- GS11.** improve work processes

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation of washing machine</i>	<b>11</b>	<b>11</b>	-	<b>1</b>
<b>PC1.</b> identify work requirement from the superior	2	1	-	-
<b>PC2.</b> visit customer location as scheduled	1	-	-	-
<b>PC3.</b> provide guidance to the customer for pre-installation requirement as per the appliance w.r.t structure, plug point, drainage, plumbing etc.	2	-	-	-
<b>PC4.</b> remove the packaging from the appliance delivered at the customer location	2	2	-	-
<b>PC5.</b> verify that the product matches the customer's order in terms of colour, model etc. along with all supporting accessories	-	2	-	-
<b>PC6.</b> check the availability of all tools and fitments for the installation	2	3	-	-
<b>PC7.</b> clear up the packaging material waste and dispose as per company's norms	-	2	-	-
<b>PC8.</b> seek customer's input on placing/positioning the appliance near a plug point, in obstruction-free area, while maintaining the required distance from water tank	1	-	-	1
<b>PC9.</b> position the washing machine on appropriate platform as per location guidelines given in the installation manual	1	1	-	-
<i>Install washing machine at customer location</i>	<b>10</b>	<b>8</b>	-	<b>2</b>
<b>PC10.</b> remove all transport pins or anything lying in the drum of the washing machine before starting the machine	1	1	-	-
<b>PC11.</b> check the necessary plumbing installations required for water inlet and outlet	1	-	-	-
<b>PC12.</b> connect the machine's drain hose with the sewage pipe to ensure proper drainage	1	-	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> identify the water inlet valve in the household plumbing	1	1	-	-
<b>PC14.</b> ensure that the valve is turned off while connecting the PVC hose water inlet of the washing machine to the valve	-	1	-	-
<b>PC15.</b> connect the waste water outlet from the washing machine to the waste system such that the dirty water does not get siphoned back into the washing machine	1	1	-	1
<b>PC16.</b> perform steps to make inlet, outlet and power supply connections securely using the correct tools and equipment for installation	1	3	-	1
<b>PC17.</b> operate and check that there are no leaks and the machine is in a safe and stable condition	1	1	-	-
<b>PC18.</b> educate the customer about switching off the unit during voltage fluctuations and use of voltage regulators, if necessary	1	-	-	-
<b>PC19.</b> provide information to the customer on proper operation and maintenance procedures	2	-	-	-
<i>Diagnose, repair and replace the faulty module of appliance</i>	<b>9</b>	<b>14</b>	-	<b>5</b>
<b>PC20.</b> diagnose the fault based on customer interaction, usage pattern and initial inspection	1	1	-	1
<b>PC21.</b> unplug the appliance to carry out further inspection	1	1	-	-
<b>PC22.</b> perform basic tests such as power supply inspection, volt ampere test and earth test power supply	1	3	-	1
<b>PC23.</b> inspect every module of the unit separately if the fault is not identified through basic tests	1	3	-	1
<b>PC24.</b> send it to factory for in-depth diagnosis if problem does not get identified at site	1	-	-	-
<b>PC25.</b> repair/replace component at location, if the fault identified is due to damage of components	1	2	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC26.</b> schedule next appointment if the part can't be replaced on site	1	-	-	-
<b>PC27.</b> reassemble the unit to check that all the modules of the unit are working as per specifications	1	2	-	1
<b>PC28.</b> demonstrate functionality of the unit to the customer	-	2	-	1
<b>PC29.</b> provide information to the customer about cleaning procedures and precautions to be taken in order to avoid recurrence of problem	1	-	-	-
<i>Complete documentation</i>	<b>4</b>	<b>7</b>	-	-
<b>PC30.</b> fill in customer acknowledgement form and get it signed by customer, both in case of installation and repair	1	2	-	-
<b>PC31.</b> document the work completed on the company ERP software for tracking and inform customer care as well as supervisor about job completion	1	3	-	-
<b>PC32.</b> complete all documentation procedures for complaint closure	1	2	-	-
<b>PC33.</b> collect necessary payments from the customer and issue invoice accordingly	1	-	-	-
<i>Coordinate with others w.r.t. installation and repair</i>	<b>6</b>	<b>10</b>	-	<b>2</b>
<b>PC34.</b> escalate customer issues and problems that are unresolved at field level, including queries on non-field service areas	2	2	-	-
<b>PC35.</b> interact with service technicians from time to time in order to understand problems faced on the field	2	4	-	1
<b>PC36.</b> provide training to junior level technicians about installation procedures, diagnosis procedures and customer handling	2	4	-	1
<b>NOS Total</b>	<b>40</b>	<b>50</b>	-	<b>10</b>

## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	ELE/N3116
<b>NOS Name</b>	Perform installation and repair of washing machine
<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>	2.0
<b>Last Reviewed Date</b>	27/01/2022
<b>Next Review Date</b>	02/06/2025
<b>NSQC Clearance Date</b>	27/01/2022

## Qualification Pack

### 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>	24/02/2025
<b>NSQC Clearance Date</b>	24/02/2022

## Qualification Pack

### 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

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- 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



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- 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	-	-

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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

## Assessment Guidelines and Assessment Weightage

### Assessment Guidelines

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

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### Minimum Aggregate Passing % at QP Level : 70

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

### Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ELE/N3101.Engage with customer for service	40	50	-	10	100	20
ELE/N3112.Perform installation and repair of refrigerator	40	50	-	10	100	20
ELE/N3114.Perform installation and repair of air conditioners	40	50	-	10	100	20
ELE/N3116.Perform installation and repair of washing machine	40	50	-	10	100	20
ELE/N9905.Work effectively at the workplace	40	60	-	-	100	10
ELE/N1002.Apply health and safety practices at the workplace	35	65	-	-	100	10
<b>Total</b>	<b>235</b>	<b>325</b>	<b>-</b>	<b>40</b>	<b>600</b>	<b>100</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.

## Qualification Pack

<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.