# Field Technician - Air Conditioner

QP Code: ELE/Q3102

Version: 2.0

NSQF Level: 4

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

# Contents

# ELE/Q3102: Field Technician - Air Conditioner

## Brief Job Description

Field Technician - Air Conditioner individual provides after-sales service to customers where he/she needs to interact with customers to diagnose the problem and assess possible causes. The individual identifies and rectifies minor problems or replaces faulty modules for failed parts or recommends factory repair for bigger faults

## Personal Attributes

An individual on this job must have good communication and interpersonal skills.The individual must be willing to work in the field and travel through the day from one customer's premise to another. Punctuality, amenable behaviour, patience, trustworthiness, integrity and citical thinking are importamt attributes for his job.

## Applicable National Occupational Standards (NOS)

### Compulsory NOS:

1. ELE/N3101: Engage with customer for service

2. ELE/N3108: Perform installation and repair of air conditioner

3. ELE/N9905: Work effectively at the workplace

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

## Qualification Pack (QP) Parameters

| | |
|---|---|
| **Sector** | Electronics |
| **Sub-Sector** | Consumer Electronics & IT Hardware |
| **Occupation** | After Sales Service |
| **Country** | India |
| **NSQF Level** | 4 |
| **Aligned to NCO/ISCO/ISIC Code** | NCO-2004/7233.50 |

| | |
|---|---|
| **Minimum Educational Qualification & Experience** | 8th Class (+ ITI (2 years after 8th) with 2 years of relevant Experience)<br>OR<br>10th Class (With 2 years of relevant Experience Or I.T.I (after 10th) Or 12th Class )<br>OR<br>Certificate (NSQF Level-3 in Safety Testing Technician RACWO with 2 years of relevant Experience) |
| **Minimum Level of Education for Training in School** | 8th Class |
| **Pre-Requisite License or Training** | NA |
| **Minimum Job Entry Age** | 18 Years |
| **Last Reviewed On** | 27/01/2022 |
| **Next Review Date** | 02/06/2025 |
| **Deactivation Date** | 02/06/2025 |
| **NSQC Approval Date** | 27/01/2022 |
| **Version** | 2.0 |
| **Reference code on NQR** | 2022/EHW/ESSC/05110 |
| **NQR Version** | 1.0 |

**Remarks:**

| |
|---|
| NA |

# ELE/N3101: Engage with customer for service

## Description

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

## Scope

The scope covers the following :

- Interact with customer
- Suggest possible solutions

## Elements and Performance Criteria

### Interacting with customer

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

**PC1.** analyse the details of customer complaint registered at customer care or installation schedule

**PC2.** connect with the customer to confirm problem telephonically and fix time for visit

**PC3.** collect appropriate tools, parts, relevant reference sheets, manuals and documents

**PC4.** visit the customer premises as per the scheduled date and time for service as per the requirement

**PC5.** check about warranty status of appliance and annual maintenance contract

**PC6.** gather detailed information pertaining to age of appliance, status of upkeep, symptoms and history of problems in the appliance

**PC7.** provide information to the customer about the warranty and problem in detail along with the precautions to be taken in order to avoid recurrence of problem

### Suggest possible solutions

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

**PC8.** suggest possible solutions with the time required, costs involved and methodology for servicing

**PC9.** seek customer's approval on further action

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** company's policies on code of conduct, organisation's culture, customer care, reporting structure and documentation policy

**KU2.** company's products and recurring problems reported in consumer appliances

**KU3.** precautions to be taken while handling field calls and dealing with customers

**KU4.** importance of personal grooming with proper etiquettes at the customer's premises

**KU5.** basic electrical, mechanical modules of various appliances and electronics involved in the type of appliance

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

## Generic Skills (GS)

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

**GS1.** complete required documentation

**GS2.** seek inputs and guidance from the supervisor

**GS3.** read and comprehend documents

**GS4.** communicate in local/regional/English language

**GS5.** comply with applicable standard operating procedures

**GS6.** communicate with all stakeholders to be able to work efficiently

**GS7.** interact with others in a polite and courteous manner

**GS8.** maintain proper etiquette while dealing with the customer

## Assessment Criteria

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

## National Occupational Standards (NOS) Parameters

| | |
|---|---|
| **NOS Code** | ELE/N3101 |
| **NOS Name** | Engage with customer for service |
| **Sector** | Electronics |
| **Sub-Sector** | Consumer Electronics & IT Hardware |
| **Occupation** | AFTER SALES SERVICE |
| **NSQF Level** | 4 |
| **Credits** | TBD |
| **Version** | 2.0 |
| **Last Reviewed Date** | 27/01/2022 |
| **Next Review Date** | 02/06/2025 |
| **NSQC Clearance Date** | 27/01/2022 |

# ELE/N3108: Perform installation and repair of air conditioner

## 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

**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

**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

## Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| *Perform pre-installation checks* | **10** | **7** | **-** | **1** |
| **PC1.** analyze the work requirements by interacting with the supervisor | 2 | 1 | - | - |
| **PC2.** plan to visit customer premises to understand the installation position of air conditioner such as window, split, high, low, etc | 2 | 1 | - | - |
| **PC3.** check that the location meets structural requirements such as distance from power supply, distance from windows/doors being opened frequently | 2 | 2 | - | 1 |
| **PC4.** inform customer about any pre installations/masonry/electrical work to be carried out | 2 | 1 | - | - |
| **PC5.** mark position for placement of indoor/outdoor units to get customer confirmation on position and installation on next visit | 2 | 2 | - | - |
| *Install the air conditioner* | **16** | **22** | **-** | **3** |
| **PC6.** remove the air conditioner packaging without causing any damage and ensure that it matches the customer order in terms of colour | 1 | 2 | - | - |
| **PC7.** check that all supporting accessories are available in the pack | 2 | 2 | - | 1 |
| **PC8.** inspect that tools and fitments required for the installation are available | 2 | 2 | - | 1 |
| **PC9.** dispose off the packaging material waste as per company's norms | 1 | 2 | - | - |
| **PC10.** measure the location to drill holes ensuring that no internal wiring damage takes place | 2 | 2 | - | - |
| **PC11.** mount the indoor unit and ensure that the screws are fastened securely | 1 | 2 | - | - |
| **PC12.** place the outdoor unit at a suitable location and attach it firmly to wall/floor | 1 | 2 | - | - |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| **PC13.** connect the indoor and the outdoor units using the field copper pipe of appropriate size and interconnecting cables | 1 | 3 | - | - |
| **PC14.** fill in additional gas if the distance between the indoor and the outdoor units is more than what is recommended | 1 | 1 | - | - |
| **PC15.** align the air conditioner as per the instructions manual and make necessary power supply connections | 2 | 2 | - | - |
| **PC16.** 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 |
| *Analyze symptoms, identify and rectify faults* | **11** | **17** | **-** | **5** |
| **PC17.** analyze usage pattern of the air conditioner from the customer | 2 | 2 | - | - |
| **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. | 1 | 2 | - | 1 |
| **PC19.** separate and inspect every module of the unit if the fault is not identified through basic tests | 1 | 2 | - | 1 |
| **PC20.** plan to send air conditioner to factory for in-depth diagnosis, if problem cannot be identified at site | 1 | 1 | - | - |
| **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 | 1 | 3 | - | 2 |
| **PC22.** plan second visit to replace dysfunctional module/part after collecting it from service center | 1 | 1 | - | - |
| **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 | 1 | 2 | - | 1 |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| **PC24.** reassemble the unit after rectifying identified fault | 1 | 2 | - | - |
| **PC25.** check that all the modules of the unit work as per specifications and confirm functionality to the customer | 1 | 1 | - | - |
| **PC26.** collect necessary payment from the customer as per rate sheet/ communication from customer care and provide the receipt | 1 | 1 | - | - |
| *Complete documentation* | **3** | **4** | **-** | **1** |
| **PC27.** fill in customer acknowledgement form and seek customer's signature | 1 | 1 | - | - |
| **PC28.** complete documentation for recording installation/repair of air conditioner and update the company ERP software for tracking/future references | 1 | 2 | - | 1 |
| **PC29.** inform customer care and supervisor about job completion | 1 | 1 | - | - |
| **NOS Total** | **40** | **50** | **-** | **10** |

## National Occupational Standards (NOS) Parameters

| | |
|---|---|
| **NOS Code** | ELE/N3108 |
| **NOS Name** | Perform installation and repair of air conditioner |
| **Sector** | Electronics |
| **Sub-Sector** | Consumer Electronics & IT Hardware |
| **Occupation** | AFTER SALES SERVICE |
| **NSQF Level** | 4 |
| **Credits** | TBD |
| **Version** | 2.0 |
| **Last Reviewed Date** | 27/01/2022 |
| **Next Review Date** | 02/06/2025 |
| **NSQC Clearance Date** | 27/01/2022 |

# ELE/N9905: Work effectively at the workplace

## Description

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

## Scope

The scope covers the following :

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

## Elements and Performance Criteria

### Communicate effectively at the workplace

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

**PC1.** exchange information and instruction with colleagues, and seek clarifications and feedback as necessary

**PC2.** assist colleagues where required

**PC3.** follow business communication etiquette in all interactions and communicative formats (online, digital, and in-person)

**PC4.** document and share all relevant information with stakeholders in agreed formats and as per agreed timelines

### Work effectively

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

**PC5.** identify and obtain clarity regarding organisational, team and own goals and targets

**PC6.** prioritise and plan work in order to achieve goals and targets

**PC7.** monitor own and team performance as per agreed plan

**PC8.** complete duties accurately, systematically and within required timeframes

**PC9.** express emotions appropriately at the workplace and manage own response to heightened emotions

**PC10.** maintain orderliness and cleanliness in the work area

### Maintain and enhance professional competence

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

**PC11.** identify own strengths and weaknesses in relation to goals and targets

**PC12.** adapt self, service, or product to meet success criteria

**PC13.** seek and select opportunities for continuous professional development

**PC14.** formulate a professional development plan to enhance capabilities

**PC15.** build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations

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

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

*Work in a disciplined and ethical manner*

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

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

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

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

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

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

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

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

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

*Uphold social diversity at the workplace*

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

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

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

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

**PC29.** respect the personal and professional space of others

**PC30.** access grievance redressal mechanisms as per legislations

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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

**KU2.** organizational hierarchy and escalation matrix

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

**KU4.** organisational norms on health, safety and sustainability

**KU5.** work area inspection procedures and practices

**KU6.** professional etiquette and grooming

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

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

**KU9.** developments and trends impacting professional practice

**KU10.** importance of taking and using feedback from colleagues and clients to identify and introduce improvements in work performance

**KU11.** professional ethics and workplace norms on reporting and/or penalizing unethical behaviour and practices.

**KU12.** guidelines and legal requirements on disclosure, confidentiality, and conflicts of interest

**KU13.** strategies for collaboration with colleagues and clients.

**KU14.** professional responses and strategies against inappropriate language or behaviour toward self and others

**KU15.** Implicit bias (based on gender, disability, class, caste, colour, race, culture, religion, etc.) and its consequences in the workplace

**KU16.** organizational guidelines, prevalent legislations and accessibility norms and processes to support PwDs at the workplace

**KU17.** strategies for time, effort and resource allocation towards the goals.

**KU18.** basic concepts of work productivity including waste reduction, efficient material usage and optimization of time

## Generic Skills (GS)

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

**GS1.** complete documentation and forms such as work orders, invoices maintenance records activity logs, attendance sheets as per organizational format in English and/or local language

**GS2.** write basic accident or incident report accurately in an appropriate format

**GS3.** read warnings, instructions and other text material on product labels, components, etc. and relevant signages, warnings, labels or descriptions on equipment, etc. while carrying out work activities

**GS4.** convey and share technical information clearly using appropriate language

**GS5.** clarify task-related information

**GS6.** liaise with authorities and supervisors as per organizational protocol

**GS7.** listen, speak, and write in an inclusive, respectful manner in line with organizational protocol

**GS8.** seek clarification from immediate supervisor or responsible authority or exercise most appropriate solutions to safety breaches at work

**GS9.** report to the supervisor and when to deal with a colleague depending on the type of concern

**GS10.** deliver product to next work process on time

**GS11.** improve work process and report potential areas of delays and disruptions

**GS12.** communicate problems appropriately to others

**GS13.** identify symptoms of the fault to the cause of the problem and resolve, otherwise seek assistance and support from other sources to solve the problem

**GS14.** anticipate and avoid hazards that may occur during repairs because of tools, materials used or repair processes

**GS15.** complete tasks efficiently and accurately within stipulated time

**GS16.** appreciate and respect social diversity in all professional settings

**GS17.** develop awareness and accountability for perspectives on gender, disabilities, and socio-cultural issues leading to discrimination, bias, or harassment at the workplace

**GS18.** maintain positive and effective relationships with colleagues and customers

## Assessment Criteria

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

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| **PC13.** seek and select opportunities for continuous professional development | 1 | 1 | - | - |
| **PC14.** formulate a professional development plan to enhance capabilities | 2 | 1 | - | - |
| **PC15.** build or contribute to the organizational knowledge base of cases, clients, issues, solutions, and innovations | 1 | 1 | - | - |
| **PC16.** examine developments and trends in field of work and their potential impact on work | 1 | 1 | - | - |
| **PC17.** take feedback from peers, supervisors and clients to improve own performance and practices | 1 | 1 | - | - |
| *Work in a disciplined and ethical manner* | **11** | **16** | **-** | **-** |
| **PC18.** perform tasks as per workplace standards, organisational policies and legislative requirements | 2 | 2 | - | - |
| **PC19.** display appropriate professional appearance at the workplace and adhere to the organisational dress code | 1 | 2 | - | - |
| **PC20.** demonstrate responsible and disciplined behaviour at the workplace such as punctuality; completing tasks as per given time and standards; demonstrating professional behaviour at all times, adopting environment- friendly practices, etc. | 1 | 2 | - | - |
| **PC21.** identify the cause of conflict and options for resolution with peers or escalate grievances and problems to appropriate authority as per procedure for conflict resolution | 2 | 2 | - | - |
| **PC22.** protect the rights of the client and organisation when delivering services | 1 | 2 | - | - |
| **PC23.** ensure services are delivered equally to all clients regardless of personal and cultural beliefs | 1 | 2 | - | - |
| **PC24.** operate within an agreed ethical code of practice and report unethical conduct to the appropriate authorities | 2 | 2 | - | - |

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

## National Occupational Standards (NOS) Parameters

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

*Follow emergencies, rescue and first-aid procedures*

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

**PC13.** administer appropriate first aid to victims in case of bleeding, burns, choking, electric shock, poisoning etc.

**PC14.** administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock,

**PC15.** participate regularly in emergency procedures such as raising alarm, safe/efficient, evacuation, correct means of taking shelter and escaping, correct assembly point, roll call, correct return to work

**PC16.** use correct method to move injured people and others during an emergency

*Effective waste management/recycling practices*

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

**PC17.** identify recyclable and non-recyclable, and hazardous waste generated

**PC18.** segregate waste into different categories

**PC19.** ensure disposal of non-recyclable waste appropriately

**PC20.** deposit non-recyclable and reusable material at identified location

**PC21.** follow processes specified for disposal of hazardous waste

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** importance of working in clean and safe work environment following safety practices and procedures

**KU2.** health and safety roles and responsibilities of relevant personnel within and outside the organisation

**KU3.** key internal and external sources of health and safety information

**KU4.** basic knowledge of electronic devices and related health risks

**KU5.** meaning of hazards and risks

**KU6.** various types of health and safety hazards commonly present in the work environment such as physical hazards, electrical hazards, chemical hazards, fire hazards, equipment related hazards, health hazards, etc.

**KU7.** methods of accident prevention

**KU8.** importance of using protective clothing/equipment while working

**KU9.** general principles for identifying and controlling health and safety risks

**KU10.** main hazards and preventive as well as control measures while working with different types of equipment

**KU11.** importance of carrying out electrical and non-electrical isolation to prevent hazards from loss of machine/system/process control

**KU12.** main hazards and preventive as well as control measures when working with electrical systems or using electrical equipment

**KU13.** forms and classifications of hazardous substances

**KU14.** safe working practices while working at various hazardous sites

**KU15.** prevention and control measures to reduce risks from exposure to hazardous substances

**KU16.** health effects associated with exposure to noise and vibration and the appropriate control measures

**KU17.** precautionary activities to prevent the fire accident

**KU18.** various causes of fire such as heating of metal, spontaneous ignition, sparking, electrical eating, loose fires (smoking, welding, etc.) chemical fires etc.

**KU19.** techniques of using the different fire extinguishers

**KU20.** different methods and material to extinguish fires

**KU21.** different materials used for extinguishing fire such as sand, water, foam, CO2, dry powder

**KU22.** rescue techniques used during a fire hazard

**KU23.** various types of safety signs and their meaning

**KU24.** basic first aid treatment relevant to the common work place injuries e.g. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries

**KU25.** contents of written accident report

**KU26.** potential injuries and ill health associated with incorrect handing of tools and equipment

**KU27.** safe lifting and carrying practices

**KU28.** potential impact to a person who is moved incorrectly

**KU29.** personal safety, health and dignity issues relating to the movement of a person by others

**KU30.** ESD measures and 5S

**KU31.** efficient utilization and management of material and water

**KU32.** ways to recognize common electrical problems and practices of conserving electricity

**KU33.** usage of different colours of dustbins, categorization of waste into dry, wet, recyclable, nonrecyclable and items of single-use plastics

**KU34.** organization's procedure for minimizing waste

**KU35.** waste management and methods of waste disposal

**KU36.** common sources of pollution and ways to minimize it

**KU37.** names, contact information and location of people responsible for health and safety in the workplace

**KU38.** location of documents and equipment for health and safety compliance/practices in the workplace

**KU39.** safety notices, signs and instructions at workplace

## Generic Skills (GS)

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

**GS1.** interpret general health and safety guidelines labels, charts, signages

**GS2.** read operation manuals

**GS3.** write health and safety compliance report

**GS4.** write an accident/incident report in local language or English

**GS5.** provide an emergency or safety incident brief to seniors or relevant authorities in a calm, clear and to-the-point manner

**GS6.** communicate general health and safety guidelines to colleagues/co-workers

**GS7.** communicate appropriately with co-workers in order to clarify instructions and other issues

**GS8.** act in case of any potential hazards observed in the work place

**GS9.** plan and organize their own work schedule, work area, tools, equipment in compliance with organizational policies for health, safety and security

**GS10.** take adequate measures to ensure the safety of clients and visitors at the workplace

**GS11.** identify immediate or temporary solutions to resolve delays

**GS12.** evaluate the work area for health and safety risks or hazards

**GS13.** use cause and effect relations to anticipate potential issues, problems and their solution in the work area related to safety

**GS14.** recognise emergency and potential emergency situations

**GS15.** protect self and others from a health and safety risk or hazard

**GS16.** communicate and collaborate to incorporate sustainable practices (greening) in workplace processes

**GS17.** record data on waste disposal at workplace

## Assessment Criteria

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

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| **PC11.**<br>• use appropriate fire extinguishers for different types of fires<br>• 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 | 1 | 3 | - | - |
| **PC12.** exhibit rescue and first-aid techniques in case of fire or electrocution | 1 | 3 | - | - |
| *Follow emergencies, rescue and first-aid procedures* | **6** | **13** | **-** | **-** |
| **PC13.** administer appropriate first aid to victims in case of bleeding, burns, choking, electric shock, poisoning etc. | 1 | 3 | - | - |
| **PC14.** administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, | 1 | 2 | - | - |
| **PC15.** participate regularly in emergency procedures such as raising alarm, safe/efficient, evacuation, correct means of taking shelter and escaping, correct assembly point, roll call, correct return to work | 2 | 4 | - | - |
| **PC16.** use correct method to move injured people and others during an emergency | 2 | 4 | - | - |
| *Effective waste management/recycling practices* | **5** | **12** | **-** | **-** |
| **PC17.** identify recyclable and non-recyclable, and hazardous waste generated | 1 | 3 | - | - |
| **PC18.** segregate waste into different categories | 1 | 2 | - | - |
| **PC19.** ensure disposal of non-recyclable waste appropriately | 1 | 2 | - | - |
| **PC20.** deposit non-recyclable and reusable material at identified location | 1 | 3 | - | - |

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

## National Occupational Standards (NOS) Parameters

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

## Assessment Guidelines and Assessment Weightage

### Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.

2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.

3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criterion.

6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

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

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

## Assessment Weightage

Compulsory NOS

| National Occupational Standards | Theory Marks | Practical Marks | Project Marks | Viva Marks | Total Marks | Weightage |
|---|---|---|---|---|---|---|
| ELE/N3101.Engage with customer for service | 40 | 50 | - | 10 | 100 | 35 |
| ELE/N3108.Perform installation and repair of air conditioner | 40 | 50 | - | 10 | 100 | 35 |
| ELE/N9905.Work effectively at the workplace | 40 | 60 | - | - | 100 | 15 |
| ELE/N1002.Apply health and safety practices at the workplace | 35 | 65 | - | - | 100 | 15 |
| **Total** | **155** | **225** | **-** | **20** | **400** | **100** |

## Acronyms

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

## Glossary

| | |
|---|---|
| **Sector** | Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests. |
| **Sub-sector** | Sub-sector is derived from a further breakdown based on the characteristics and interests of its components. |
| **Occupation** | Occupation is a set of job roles, which perform similar/ related set of functions in an industry. |
| **Job role** | Job role defines a unique set of functions that together form a unique employment opportunity in an organisation. |
| **Occupational Standards (OS)** | OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts. |
| **Performance Criteria (PC)** | Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task. |
| **National Occupational Standards (NOS)** | NOS are occupational standards which apply uniquely in the Indian context. |
| **Qualifications Pack (QP)** | QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code. |
| **Unit Code** | Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N' |
| **Unit Title** | Unit title gives a clear overall statement about what the incumbent should be able to do. |
| **Description** | Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for. |
| **Scope** | Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required. |

| Knowledge and Understanding (KU) | Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard. |
|---|---|
| Organisational Context | Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility. |
| Technical Knowledge | Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities. |
| Core Skills/ Generic Skills (GS) | Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles. |
| Electives | Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives. |
| Options | Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options. |
| Declarative Knowledge | Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem. |
| Key Learning Outcome | Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application). |
| OJT (M) | On-the-job training (Mandatory) trainees are mandated to complete specified hours of training on site |
| OJT (R) | On-the-job training (Recommended) trainees are recommended the specified hours of training on site |
| Procedural Knowledge | Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills. |
| Training Outcome | Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training. |

| **Terminal Outcome** | Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome. |
|---|---|

# Field Technician - Air Conditioner

QP Code: ELE/Q3102

Version: 1.0

NSQF Level: 4

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

# Contents

# ELE/Q3102: Field Technician - Air Conditioner

## Brief Job Description

The individual at work installs the air conditioner and interacts with customers to diagnose the problem and assess possible causes. Once the problem and causes have been identified, the individual rectifies minor problems or 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 customers premise to another. Punctuality, amenable behaviour, patience, good interpersonal relationship building, trustworthiness, integrity and critical thinking are important attributes for this job.

## Applicable National Occupational Standards (NOS)

### Compulsory NOS:

1. ELE/N3101: Engage with customer for service

2. ELE/N3108: Install the air conditioner

3. ELE/N3109: Repair dysfunctional air conditioner

4. ELE/N9901: Interact with colleagues

## Qualification Pack (QP) Parameters

| | |
|---|---|
| **Sector** | Electronics |
| **Sub-Sector** | Consumer Electronics & IT Hardware |
| **Occupation** | After Sales Service |
| **Country** | India |
| **NSQF Level** | 4 |
| **Aligned to NCO/ISCO/ISIC Code** | NCO-2004/7233.50 |
| **Minimum Educational Qualification & Experience** | 8th Class with 1-2 Years of experience |
| **Minimum Level of Education for Training in School** | 8th Class |

| | |
|---|---|
| **Pre-Requisite License or Training** | NA |
| **Minimum Job Entry Age** | 18 Years |
| **Last Reviewed On** | 24/12/2015 |
| **Next Review Date** | 31/03/2022 |
| **NSQC Approval Date** | 20/07/2015 |
| **Version** | 1.0 |
| **Reference code on NQR** | 2015/EHW/ESSC/00636 |
| **NQR Version** | 1.0 |

सत्यमेव जयते
**GOVERNMENT OF INDIA**
**MINISTRY OF SKILL DEVELOPMENT**
**& ENTREPRENEURSHIP**

# ELE/N3101: Engage with customer for service

## Description

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

## Scope

This unit/ task covers the following:

- Interact with the customer prior to visit
- Interact with customer at their premises
- Suggest possible solutions to customer
- Achieve productivity and quality as per company's norms

## Elements and Performance Criteria

*Interacting with customer prior to visit*

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

**PC1.** check customer complaint registered at customer care or installation schedule

**PC2.** call customer to confirm problem and fix time for visit

**PC3.** greet the customer and confirm the problem registered

**PC4.** be polite and patient when interacting with customer

**PC5.** check about warranty status of appliance and annual maintenance contract

**PC6.** anticipate possible problems to carry tools and parts accordingly

**PC7.** ascertain customer location in order to make the route plan for the day

*Interacting with customer at their premises*

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

**PC8.** enquire about the symptoms and history of problems in the appliance

**PC9.** ask about the age of appliance and status of upkeep

**PC10.** identify the problem based on customers information

**PC11.** communicate the problems identified and educate on possible reasons

**PC12.** inform about costs involved

*Suggesting possible solutions to customer*

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

**PC13.** discuss the problem(s) identified with customer

**PC14.** suggest possible solutions and costs involved

**PC15.** explain the time required and methodology for servicing necessary

**PC16.** seek customers approval on further action

*Achieving productivity and quality*

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

**PC17.** accurately assess the problem and solution(s) necessary

**PC18.** offer most appropriate and cost-effective service as per customers requirement

**PC19.** communicate problem effectively in order to secure customers confidence

**PC20.** ensure customer satisfaction and positive feedback

**PC21.** record minimum customer complaints post service

**PC22.** avoid repeat problem post service

**PC23.** prepare most optimum route plan to complete daily target visits

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** companys policies on: customer care

**KU2.** companys code of conduct

**KU3.** organisation culture and typical customer profile

**KU4.** companys reporting structure

**KU5.** companys documentation policy

**KU6.** companys products and recurring problems reported in consumer appliances

**KU7.** how to communicate with customers in order to put them at ease

**KU8.** basic electrical and mechanical modules of various appliances

**KU9.** electronics involved in the type of appliance

**KU10.** models of different appliances and their common and distinguishing features

**KU11.** functionality of different features of appliances and new features

**KU12.** etiquette to be followed at customers premises

**KU13.** precautions to be taken while handling field calls and dealing with customers

**KU14.** relevant reference sheets, manuals and documents to carry in the field

## Generic Skills (GS)

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

**GS1.** how to read product and module serial numbers and interpret details such as make, date, availability

**GS2.** how to note problems on job sheet and details of work done

**GS3.** to put customer at ease and generate customers confidence

**GS4.** to listen carefully and interpret their statement of symptoms

**GS5.** to seek inputs at assess the problems

**GS6.** how to communicate in local language

**GS7.** how to educate and inform customer about contractual issues such as warranty, cost of service and module replacement

**GS8.** to educate on precautions to be taken post repairs to avoid recurrence of problem

**GS9.** importance of personal grooming

**GS10.** significance of etiquette such as maintaining the appropriate physical distance with customer during conversation, not entering bedroom without permission

**GS11.** importance of being patient and courteous with all types of customers

**GS12.** being polite and courteous under all circumstances

**GS13.** importance of maintaining clean surface/work area

**GS14.** decide on the spot on whether interaction of customer with supervisor is necessary or not

**GS15.** when to call customer care and close the call after work is done to customers satisfaction and documentation is complete

## Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| *Interacting with customer prior to visit* | **7** | **14** | **-** | **-** |
| **PC1.** check customer complaint registered at customer care or installation schedule | 1 | 2 | - | - |
| **PC2.** call customer to confirm problem and fix time for visit | 1 | 2 | - | - |
| **PC3.** greet the customer and confirm the problem registered | 1 | 2 | - | - |
| **PC4.** be polite and patient when interacting with customer | 1 | 2 | - | - |
| **PC5.** check about warranty status of appliance and annual maintenance contract | 1 | 2 | - | - |
| **PC6.** anticipate possible problems to carry tools and parts accordingly | 1 | 2 | - | - |
| **PC7.** ascertain customer location in order to make the route plan for the day | 1 | 2 | - | - |
| *Interacting with customer at their premises* | **10** | **14** | **-** | **-** |
| **PC8.** enquire about the symptoms and history of problems in the appliance | 2 | 2 | - | - |
| **PC9.** ask about the age of appliance and status of upkeep | 2 | 3 | - | - |
| **PC10.** identify the problem based on customers information | 2 | 3 | - | - |
| **PC11.** communicate the problems identified and educate on possible reasons | 2 | 3 | - | - |
| **PC12.** inform about costs involved | 2 | 3 | - | - |
| *Suggesting possible solutions to customer* | **8** | **12** | **-** | **-** |
| **PC13.** discuss the problem(s) identified with customer | 2 | 3 | - | - |
| **PC14.** suggest possible solutions and costs involved | 2 | 3 | - | - |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| **PC15.** explain the time required and methodology for servicing necessary | 2 | 3 | - | - |
| **PC16.** seek customers approval on further action | 2 | 3 | - | - |
| *Achieving productivity and quality* | **15** | **20** | **-** | **-** |
| **PC17.** accurately assess the problem and solution(s) necessary | 2 | 3 | - | - |
| **PC18.** offer most appropriate and cost-effective service as per customers requirement | 2 | 3 | - | - |
| **PC19.** communicate problem effectively in order to secure customers confidence | 2 | 3 | - | - |
| **PC20.** ensure customer satisfaction and positive feedback | 2 | 3 | - | - |
| **PC21.** record minimum customer complaints post service | 2 | 3 | - | - |
| **PC22.** avoid repeat problem post service | 2 | 3 | - | - |
| **PC23.** prepare most optimum route plan to complete daily target visits | 3 | 2 | - | - |
| **NOS Total** | **40** | **60** | **-** | **-** |

## National Occupational Standards (NOS) Parameters

| | |
|---|---|
| **NOS Code** | ELE/N3101 |
| **NOS Name** | Engage with customer for service |
| **Sector** | Electronics |
| **Sub-Sector** | Consumer Electronics & IT Hardware |
| **Occupation** | AFTER SALES SERVICE |
| **NSQF Level** | 4 |
| **Credits** | NA |
| **Version** | 1.0 |
| **Last Reviewed Date** | 24/12/2013 |
| **Next Review Date** | 31/03/2022 |
| **NSQC Clearance Date** | NA |

# ELE/N3108: Install the air conditioner

## Description

This OS unit is about installing the newly purchased air conditioner at customers location and make it ready to use.

## Scope

This unit/ task covers the following:

- Undertake pre-installation site visit
- Remove packaging and check accessories
- Place the air conditioner at identified location
- Check air conditioner's functioning
- Complete the documentation
- Interact with supervisor or superior
- Achieve productivity and quality as per company's norms

## Elements and Performance Criteria

*Undertake preinstallation site visit*

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

**PC1.**  visit the customers premise before carrying out the installation

**PC2.**  interact with the customer to understand where the air conditioner is to be installed, i.e., 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.**  make the customer aware of any pre-installations/masonry/electrical work to be carried out and educate the customer about requirement of concealed drainage and electric conduits

**PC5.**  make necessary markings for placement of indoor and outdoor units

**PC6.**  seek appointment for the next visit

*Remove packaging and check accessories*

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

**PC7.**  remove the air conditioner packaging in which it was shipped to customer from point of sale/ warehouse

**PC8.**  check that the product matches the customer order in terms of colour and make

**PC9.**  check that all supporting accessories purchased have are there in the pack

**PC10.**  check that tools and fitments required for the installation are available

**PC11.**  clear up the packaging material waste and dispose as per companys norms

*Place the air conditioner at identified location*

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

**PC13.**  maintain required distance from door/window

**PC14.** make measurements at the location identified and drill holes ensuring no internal wiring damage takes place

**PC15.** mount the indoor unit and ensure that the screws are fastened securely

**PC16.** place the outdoor unit at a suitable location and attach it firmly to wall/floor

**PC17.** connect the indoor and the outdoor units using the field copper pipe of appropriate size and interconnecting cables

**PC18.** fill in additional gas if the distance between the indoor and the outdoor units is more than what is recommended

**PC12.** check if pre-installation requirements are met

*Check air conditioners functioning*

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

**PC19.** make necessary power supply connections

**PC20.** align the air conditioner as per the instructions manual

**PC21.** demonstrate the features and utility

**PC22.** explain the precautions to be taken while using the air conditioner

*Complete the documentation*

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

**PC23.** fill in customer acknowledgement form

**PC24.** seek customers signature

**PC25.** complete other documentation for recording completion of installation

**PC26.** call customer care and inform about job completed

*Interact with supervisor or superior*

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

**PC27.** understand the work requirement from superior, periodically

**PC28.** report to superior on the work completed

**PC29.** escalate the customer issues and problems that are unresolved in the field

**PC30.** document the work completed on the company ERP software for tracking and future references

*Achieve productivity and quality as per companys norms*

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

**PC31.** remove packaging without damage to the air conditioner unit and accessories

**PC32.** position air conditioner as per requirements specified in instructions manual

**PC33.** educate customer on importance of proper placing

**PC34.** inform about switching off the unit during voltage fluctuations and use of stabilizers, if necessary

**PC35.** carry and use the correct tools and equipment for installation

**PC36.** operate and check that they are in a safe and stable condition

**PC37.** complete installation in time target given

**PC38.** educate customer on proper operation and maintenance procedures

**PC39.** complete daily field schedule as per instructions/format within the designated time

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** companys policies on: incentives, delivery standards, and personnel management, call closure
**KU2.** companys sales, installation and after sales support policy
**KU3.** importance of the individuals role in the workflow
**KU4.** reporting structure
**KU5.** companys policy on products warranty and other terms and conditions
**KU6.** installation-site requirements (structural requirements, ventilation, etc.)
**KU7.** different types of air conditioners such as window, split, cassette etc.
**KU8.** different features and functionalities of various models
**KU9.** safety precautions to be taken while installing
**KU10.** manual-based procedure of installing the air conditioner
**KU11.** packaging waste disposal procedures
**KU12.** use of test equipment and tools such as multi-meter, oscilloscope
**KU13.** other products of the company
**KU14.** safety rules, policies and procedures
**KU15.** quality standards to be followed
**KU16.** how the refrigeration cycle works
**KU17.** how to operate the air conditioner and use the various features
**KU18.** how to fix various accessories and parts that have accompanied the unit
**KU19.** how to check features and functionalities after installation
**KU20.** how to operate tools such as screw drivers, electric drill for installation
**KU21.** how to make appropriate settings after plugging in

## Generic Skills (GS)

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

**GS1.** document the completed work on computer and paper
**GS2.** note problems on job sheet and details of work done
**GS3.** read job sheet for installation as registered by customer care/ companys ERP system
**GS4.** read the standard operating procedures for different types of air conditioner
**GS5.** read about different types of air conditioners, their basic electro-mechanical structure and functionality of features
**GS6.** receive and ask for clarifications from supervisor on the job requirement
**GS7.** listen carefully to customer and interpret customers statement of symptoms
**GS8.** communicate in local language
**GS9.** educate and inform customer about product, contractual issues such as warranty, cost of service and module replacement

**GS10.** educate on precautions to be taken in order to avoid recurrence of problem

**GS11.** follow standard operating procedures while making decisions

**GS12.** take approval from supervisor in case the decision has to be made for exceptions

**GS13.** share work load as required

**GS14.** achieve the targets given on installation per day or month

**GS15.** report on any customer concerns to superiors without delay

**GS16.** maintain personal grooming

**GS17.** be polite, patient and courteous under all circumstances with all types of customers

**GS18.** decide on the spot on whether interaction of customer with superior is necessary or not

**GS19.** maintain proper etiquette including the appropriate physical distance with customer during conversation, not entering bedroom without permission

**GS20.** put customer at ease and generate customers confidence

**GS21.** spot process disruptions and delays

**GS22.** seek inputs at assess the problems

**GS23.** reduce repetition of errors in installation

**GS24.** improve work processes

## Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| *Undertake preinstallation site visit* | **6** | **6** | **-** | **-** |
| **PC1.** visit the customers premise before carrying out the installation | 1 | 1 | - | - |
| **PC2.** interact with the customer to understand where the air conditioner is to be installed, i.e., window, split, high, low, etc. | 1 | 1 | - | - |
| **PC3.** check that the location meets structural requirements such as distance from power supply, distance from windows/doors being opened frequently | 1 | 1 | - | - |
| **PC4.** make the customer aware of any pre-installations/masonry/electrical work to be carried out and educate the customer about requirement of concealed drainage and electric conduits | 1 | 1 | - | - |
| **PC5.** make necessary markings for placement of indoor and outdoor units | 1 | 1 | - | - |
| **PC6.** seek appointment for the next visit | 1 | 1 | - | - |
| *Remove packaging and check accessories* | **5** | **5** | **-** | **-** |
| **PC7.** remove the air conditioner packaging in which it was shipped to customer from point of sale/ warehouse | 1 | 1 | - | - |
| **PC8.** check that the product matches the customer order in terms of colour and make | 1 | 1 | - | - |
| **PC9.** check that all supporting accessories purchased have are there in the pack | 1 | 1 | - | - |
| **PC10.** check that tools and fitments required for the installation are available | 1 | 1 | - | - |
| **PC11.** clear up the packaging material waste and dispose as per companys norms | 1 | 1 | - | - |
| *Place the air conditioner at identified location* | **7** | **7** | **-** | **-** |
| **PC13.** maintain required distance from door/window | 1 | 1 | - | - |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| **PC14.** make measurements at the location identified and drill holes ensuring no internal wiring damage takes place | 1 | 1 | - | - |
| **PC15.** mount the indoor unit and ensure that the screws are fastened securely | 1 | 1 | - | - |
| **PC16.** place the outdoor unit at a suitable location and attach it firmly to wall/floor | 1 | 1 | - | - |
| **PC17.** connect the indoor and the outdoor units using the field copper pipe of appropriate size and interconnecting cables | 1 | 1 | - | - |
| **PC18.** fill in additional gas if the distance between the indoor and the outdoor units is more than what is recommended | 1 | 1 | - | - |
| **PC12.** check if pre-installation requirements are met | 1 | 1 | - | - |
| *Check air conditioners functioning* | **4** | **12** | **-** | **-** |
| **PC19.** make necessary power supply connections | 1 | 3 | - | - |
| **PC20.** align the air conditioner as per the instructions manual | 1 | 3 | - | - |
| **PC21.** demonstrate the features and utility | 1 | 3 | - | - |
| **PC22.** explain the precautions to be taken while using the air conditioner | 1 | 3 | - | - |
| *Complete the documentation* | **4** | **6** | **-** | **-** |
| **PC23.** fill in customer acknowledgement form | 1 | 2 | - | - |
| **PC24.** seek customers signature | 1 | 1 | - | - |
| **PC25.** complete other documentation for recording completion of installation | 1 | 2 | - | - |
| **PC26.** call customer care and inform about job completed | 1 | 1 | - | - |
| *Interact with supervisor or superior* | **5** | **11** | **-** | **-** |
| **PC27.** understand the work requirement from superior, periodically | 1 | 3 | - | - |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| **PC28.** report to superior on the work completed | 1 | 3 | - | - |
| **PC29.** escalate the customer issues and problems that are unresolved in the field | 1 | 3 | - | - |
| **PC30.** document the work completed on the company ERP software for tracking and future references | 2 | 2 | - | - |
| *Achieve productivity and quality as per companys norms* | **9** | **13** | **-** | **-** |
| **PC31.** remove packaging without damage to the air conditioner unit and accessories | 2 | 3 | - | - |
| **PC32.** position air conditioner as per requirements specified in instructions manual | 2 | 3 | - | - |
| **PC33.** educate customer on importance of proper placing | 1 | 1 | - | - |
| **PC34.** inform about switching off the unit during voltage fluctuations and use of stabilizers, if necessary | 1 | 1 | - | - |
| **PC35.** carry and use the correct tools and equipment for installation | 1 | 1 | - | - |
| **PC36.** operate and check that they are in a safe and stable condition | - | 1 | - | - |
| **PC37.** complete installation in time target given | - | 1 | - | - |
| **PC38.** educate customer on proper operation and maintenance procedures | 1 | 1 | - | - |
| **PC39.** complete daily field schedule as per instructions/format within the designated time | 1 | 1 | - | - |
| **NOS Total** | **40** | **60** | **-** | **-** |

## National Occupational Standards (NOS) Parameters

| | |
|---|---|
| **NOS Code** | ELE/N3108 |
| **NOS Name** | Install the air conditioner |
| **Sector** | Electronics |
| **Sub-Sector** | Consumer Electronics & IT Hardware |
| **Occupation** | AFTER SALES SERVICE |
| **NSQF Level** | 4 |
| **Credits** | NA |
| **Version** | 1.0 |
| **Last Reviewed Date** | 24/12/2015 |
| **Next Review Date** | 31/03/2022 |
| **NSQC Clearance Date** | NA |

# ELE/N3109: Repair dysfunctional air conditioner

## Description

This OS unit is about understanding the customers complaints, identifying the fault and fixing the air conditioner.

## Scope

This unit/ task covers the following:

- Understand the symptoms in the air-conditioner and identify the fault
- Replace dysfunctional module in the air conditioner unit
- Confirm functionality of the repaired unit
- Achieve productivity and quality as per company's norms

## Elements and Performance Criteria

*Understand the symptoms in the airconditioner and identify the fault*

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

**PC1.** understand usage pattern of the air conditioner from the customer

**PC2.** diagnose the fault based on customer interaction and initial inspection

**PC3.** unplug the unit, carry out basic tests such as power supply inspection, volt ampere test and earthing test power supply, compressor, motors, PCB, condenser

**PC4.** separate and inspect every module of the unit if the fault is not identified through basic tests

**PC5.** send to factory for in depth diagnosis, if problem remains un-identified at site

*Replace dysfunctional module in the air conditioner unit*

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

**PC6.** replace component at location, if the fault identified is because of damage of components such as relay or thermostat

**PC7.** remove and replace the faulty module with a functional one, either on a second visit or as pre-identified and collected from the service centre, if the problem is at the PCB level or components that cannot be replaced at site

**PC8.** 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

*Confirm functionality of the repaired unit*

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

**PC9.** reassemble the unit

**PC10.** switch on power supply and confirm that unit is functioning

**PC11.** check that all the modules of the unit work as per specifications

**PC12.** demonstrate and confirm functionality of the unit with customer

**PC13.** educate the customer about cleaning procedures and other best practices

**PC14.** collect necessary payments from the customer, if applicable

**PC15.** fill in customer acknowledgement form

**PC16.** complete other documentation procedures to record complaint closure

*Achieve productivity and quality as per companys norms*

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

**PC17.** ensure damage free handling of the unit

**PC18.** diagnose the problem accurately and in assigned time

**PC19.** identify the problem modules accurately such as the power supply, compressor, fan motors, PCB

**PC20.** fix the dysfunctional air conditioner in designated time

**PC21.** rectify completely to avoid repeat fault in the air conditioner

**PC22.** record minimum customer complaints post service

**PC23.** meet daily target on attending to number of complaints

**PC24.** select the right spares according to recorded complaints at the customer care

**PC25.** clearly communicate type of module required to the service centre, if a faulty module is to be replaced

**PC26.** secure repairs completion receipt from customer

**PC27.** educate customer on air conditioner maintenance and correct practices to follow in order to avoid further problems

**PC28.** ensure 100% customer satisfaction

**PC29.** recover payments as per rate sheet/ communication from customer care

**PC30.** sell related products such as new equipment or Annual Maintenance Contracts (AMC) as per company policy

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** companys policies on: incentives, delivery standards and personnel management and customer service standards

**KU2.** reporting and documentation processes

**KU3.** air conditioner manufacturing capabilities of the organization

**KU4.** importance of the individuals role in the system

**KU5.** reporting structure

**KU6.** different types of air conditioners, e.g., window, split air, cassette conditioners and differences in their operation

**KU7.** features of different air conditioners of the company

**KU8.** functioning of the appliance and its various modules

**KU9.** method of air conditioning, its use and functioning of sealed system

**KU10.** Basics of types of refrigerants such as R12, R22, R134a, R290, R600a, R410, R32 use of different brazing sticks, types of brazing torches and their application

**KU11.** types of brazing torches, types of fluxes and their application

**KU12.** basic electronics (knowledge of components such as diode, transformer, LED, photo transistor, capacitor, resistor, inductor, thermisters)

**KU13.** functioning of various electromechanical parts of the air conditioner

**KU14.** fundamentals of electricity such as ohms law, difference between ac and dc, calculation of energy consumption of appliances, understanding of domestic wiring, understanding of series and parallel connections

**KU15.** troubleshooting knowledge with respect to air conditioners

**KU16.** hazards, their causes and prevention/personal safety

**KU17.** frequently occurring faults such as poor/no cooling, noisy unit, condensation water over flowing

**KU18.** components/modules of the air conditioner and their prices

**KU19.** energy ratings such BEE rating and concepts of e waste

**KU20.** other products of the company

**KU21.** how to operate computers and software installed

**KU22.** how to operate/use multi-meter, clamp meter, tube cutter, tube bender, vacuum pump, weigh scale, gas cylinder, temperature meter, pressure gauges

**KU23.** how to detect basic electrical faults such as improper/no earthing, defective power cord, connector or internal wiring defect, short/ loose/open contacts, blown fuse

**KU24.** 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, incorrect fan speed setting, any loose/open connections

**KU25.** how to detect defects in the compressor such as electrical faults, compressor over load, jamming/noise

**KU26.** how to identify reasons for improper functioning of compressor such as blown fuse, defective thermostat, defective compressor starting capacitor, defective compressor running capacitor, compressor starting relay defective

**KU27.** how to detect problems in the condenser such as clogging in the condenser, tubes touching each other

**KU28.** how to detect other problems such as improper alignment of unit, low refrigerant charge, gas leak, restriction/choke in refrigerant line, moisture in the system etc.

## Generic Skills (GS)

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

**GS1.** document completion note for customer

**GS2.** record completion information in the ERP system

**GS3.** note problems on job sheet and details of work done

**GS4.** read warnings, instructions and other text material on product labels, and components

**GS5.** read job sheet and complaints

**GS6.** read product operating manuals

**GS7.** read and understand electrical and electronic symbols, multiples and SI units

**GS8.** interact with customer to understand the problem faced

**GS9.** market and sell accessories and products of the company

**GS10.** importance of communicating in language

**GS11.** importance of behavioural precautions and etiquette while dealing with customer

**GS12.** be polite, patient and punctual

**GS13.** follow standard operating procedures while making decisions

**GS14.** take approval from supervisor in case the decision has to be made for exceptions

**GS15.** share work load as required

**GS16.** achieve the targets given on installation per day or month

**GS17.** report on any customer concerns to superiors without delay

**GS18.** maintain personal grooming

**GS19.** be polite, patient and courteous under all circumstances with all types of customers

**GS20.** decide on the spot on whether interaction of customer with superior is necessary or not

**GS21.** maintain proper etiquette including the appropriate physical distance with customer during conversation, not entering bedroom without permission

**GS22.** put customer at ease and generate customers confidence

**GS23.** spot process disruptions and delays

**GS24.** seek inputs at assess the problems

**GS25.** match symptoms of the fault noticed to the cause of the problem

**GS26.** anticipate and avoid hazards that may occur during repairs because of tools, materials used or repair processes

**GS27.** reduce repetition of errors in installation

**GS28.** improve work processes

## Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| *Understand the symptoms in the airconditioner and identify the fault* | **10** | **10** | - | - |
| **PC1.** understand usage pattern of the air conditioner from the customer | 2 | 2 | - | - |
| **PC2.** diagnose the fault based on customer interaction and initial inspection | 2 | 2 | - | - |
| **PC3.** unplug the unit, carry out basic tests such as power supply inspection, volt ampere test and earthing test power supply, compressor, motors, PCB, condenser | 2 | 2 | - | - |
| **PC4.** separate and inspect every module of the unit if the fault is not identified through basic tests | 2 | 2 | - | - |
| **PC5.** send to factory for in depth diagnosis, if problem remains un-identified at site | 2 | 2 | - | - |
| *Replace dysfunctional module in the air conditioner unit* | **12** | **18** | - | - |
| **PC6.** replace component at location, if the fault identified is because of damage of components such as relay or thermostat | 4 | 6 | - | - |
| **PC7.** remove and replace the faulty module with a functional one, either on a second visit or as pre-identified and collected from the service centre, if the problem is at the PCB level or components that cannot be replaced at site | 4 | 6 | - | - |
| **PC8.** 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 | 4 | 6 | - | - |
| *Confirm functionality of the repaired unit* | **10** | **16** | - | - |
| **PC9.** reassemble the unit | 1 | 2 | - | - |
| **PC10.** switch on power supply and confirm that unit is functioning | 1 | 2 | - | - |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| **PC11.** check that all the modules of the unit work as per specifications | 1 | 2 | - | - |
| **PC12.** demonstrate and confirm functionality of the unit with customer | 2 | 2 | - | - |
| **PC13.** educate the customer about cleaning procedures and other best practices | 2 | 2 | - | - |
| **PC14.** collect necessary payments from the customer, if applicable | 1 | 2 | - | - |
| **PC15.** fill in customer acknowledgement form | 1 | 2 | - | - |
| **PC16.** complete other documentation procedures to record complaint closure | 1 | 2 | - | - |
| *Achieve productivity and quality as per companys norms* | **8** | **16** | **-** | **-** |
| **PC17.** ensure damage free handling of the unit | - | 1 | - | - |
| **PC18.** diagnose the problem accurately and in assigned time | 1 | 1 | - | - |
| **PC19.** identify the problem modules accurately such as the power supply, compressor, fan motors, PCB | 1 | 2 | - | - |
| **PC20.** fix the dysfunctional air conditioner in designated time | 1 | 1 | - | - |
| **PC21.** rectify completely to avoid repeat fault in the air conditioner | 1 | 1 | - | - |
| **PC22.** record minimum customer complaints post service | - | 1 | - | - |
| **PC23.** meet daily target on attending to number of complaints | - | 1 | - | - |
| **PC24.** select the right spares according to recorded complaints at the customer care | - | 1 | - | - |
| **PC25.** clearly communicate type of module required to the service centre, if a faulty module is to be replaced | 1 | 1 | - | - |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| **PC26.** secure repairs completion receipt from customer | 1 | 1 | - | - |
| **PC27.** educate customer on air conditioner maintenance and correct practices to follow in order to avoid further problems | 1 | 2 | - | - |
| **PC28.** ensure 100% customer satisfaction | 1 | 1 | - | - |
| **PC29.** recover payments as per rate sheet/ communication from customer care | - | 1 | - | - |
| **PC30.** sell related products such as new equipment or Annual Maintenance Contracts (AMC) as per company policy | - | 1 | - | - |
| **NOS Total** | **40** | **60** | **-** | **-** |

## National Occupational Standards (NOS) Parameters

| | |
|---|---|
| **NOS Code** | ELE/N3109 |
| **NOS Name** | Repair dysfunctional air conditioner |
| **Sector** | Electronics |
| **Sub-Sector** | Consumer Electronics & IT Hardware |
| **Occupation** | AFTER SALES SERVICE |
| **NSQF Level** | 4 |
| **Credits** | NA |
| **Version** | 1.0 |
| **Last Reviewed Date** | 24/12/2015 |
| **Next Review Date** | 31/03/2022 |
| **NSQC Clearance Date** | NA |

# ELE/N9901: Interact with colleagues

## Description

This OS unit is about communicating with colleagues and seniors in order to achieve smooth work flow

## Scope

This unit/ task covers the following:

- Interact with supervisor or superior
- Coordinate with colleagues

## Elements and Performance Criteria

### Interacting with supervisor

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

**PC1.** understand work requirements, targets and incentives

**PC2.** learn about new product models, their features and functions

**PC3.** report problems identified in the field

**PC4.** escalate customer concerns that cannot be handled on field

**PC5.** resolve personnel issues

**PC6.** receive feedback on work standards and customer satisfaction

**PC7.** communicate any potential hazards at a particular location

**PC8.** meet given targets

**PC9.** deliver work of expected quality despite constraints

**PC10.** have feedback from a happy and satisfied customer

### Interacting with colleagues

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

**PC11.** resolve inter-personnel conflicts and achieve smooth workflow

**PC12.** receive spares from tool room or stores

**PC13.** deposit faulty modules and tools to stores

**PC14.** pass on customer complaints to colleagues in a respective geographical area

**PC15.** assist colleagues with resolving field problems

**PC16.** clearly demarcate roles of each team member

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

**KU1.** companys policies on: incentives, delivery standards, and personnel management

**KU2.** importance of the individuals role in the workflow

**KU3.** reporting structure

**KU4.** how to communicate effectively

**KU5.** how to build team coordination

## Generic Skills (GS)

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

**GS1.** to deliver product to next work process on time

**GS2.** how to report potential areas of disruptions to work process

**GS3.** when to report to supervisor and when to deal with a colleague depending on the type of concern

**GS4.** how to improve work process

**GS5.** how to spot process disruptions and delays

## Assessment Criteria

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| *Interacting with supervisor* | **22** | **36** | **-** | **-** |
| **PC1.** understand work requirements, targets and incentives | 2 | 3 | - | - |
| **PC2.** learn about new product models, their features and functions | 3 | 3 | - | - |
| **PC3.** report problems identified in the field | 3 | 3 | - | - |
| **PC4.** escalate customer concerns that cannot be handled on field | 2 | 4 | - | - |
| **PC5.** resolve personnel issues | 2 | 4 | - | - |
| **PC6.** receive feedback on work standards and customer satisfaction | 2 | 4 | - | - |
| **PC7.** communicate any potential hazards at a particular location | 2 | 4 | - | - |
| **PC8.** meet given targets | 2 | 4 | - | - |
| **PC9.** deliver work of expected quality despite constraints | 2 | 4 | - | - |
| **PC10.** have feedback from a happy and satisfied customer | 2 | 3 | - | - |
| *Interacting with colleagues* | **18** | **24** | **-** | **-** |
| **PC11.** resolve inter-personnel conflicts and achieve smooth workflow | 3 | 4 | - | - |
| **PC12.** receive spares from tool room or stores | 3 | 4 | - | - |
| **PC13.** deposit faulty modules and tools to stores | 3 | 4 | - | - |
| **PC14.** pass on customer complaints to colleagues in a respective geographical area | 3 | 4 | - | - |
| **PC15.** assist colleagues with resolving field problems | 3 | 4 | - | - |

| Assessment Criteria for Outcomes | Theory Marks | Practical Marks | Project Marks | Viva Marks |
|---|---|---|---|---|
| **PC16.** clearly demarcate roles of each team member | 3 | 4 | - | - |
| **NOS Total** | **40** | **60** | **-** | **-** |

## National Occupational Standards (NOS) Parameters

| | |
|---|---|
| **NOS Code** | ELE/N9901 |
| **NOS Name** | Interact with colleagues |
| **Sector** | Electronics |
| **Sub-Sector** | Generic |
| **Occupation** | Generic |
| **NSQF Level** | 4 |
| **Credits** | NA |
| **Version** | 1.0 |
| **Last Reviewed Date** | 24/12/2013 |
| **Next Review Date** | 31/03/2022 |
| **NSQC Clearance Date** | NA |

## Assessment Guidelines and Assessment Weightage

**Assessment Guidelines**

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ 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 Element/ 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 center (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

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

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

## Assessment Weightage

Compulsory NOS

| National Occupational Standards | Theory Marks | Practical Marks | Project Marks | Viva Marks | Total Marks | Weightage |
|---|---|---|---|---|---|---|
| ELE/N3101.Engage with customer for service | 40 | 60 | - | - | 100 | 25 |
| ELE/N3108.Install the air conditioner | 40 | 60 | - | - | 100 | 25 |
| ELE/N3109.Repair dysfunctional air conditioner | 40 | 60 | - | - | 100 | 25 |
| ELE/N9901.Interact with colleagues | 40 | 60 | - | - | 100 | 25 |
| **Total** | **160** | **240** | **-** | **-** | **400** | **100** |

## Acronyms

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

## Glossary

| | |
|---|---|
| **Sector** | Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests. |
| **Sub-sector** | Sub-sector is derived from a further breakdown based on the characteristics and interests of its components. |
| **Occupation** | Occupation is a set of job roles, which perform similar/ related set of functions in an industry. |
| **Job role** | Job role defines a unique set of functions that together form a unique employment opportunity in an organisation. |
| **Occupational Standards (OS)** | OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts. |
| **Performance Criteria (PC)** | Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task. |
| **National Occupational Standards (NOS)** | NOS are occupational standards which apply uniquely in the Indian context. |
| **Qualifications Pack (QP)** | QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code. |
| **Unit Code** | Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N' |
| **Unit Title** | Unit title gives a clear overall statement about what the incumbent should be able to do. |
| **Description** | Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for. |
| **Scope** | Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required. |

| Knowledge and Understanding (KU) | Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard. |
|---|---|
| Organisational Context | Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility. |
| Technical Knowledge | Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities. |
| Core Skills/ Generic Skills (GS) | Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles. |
| Electives | Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives. |
| Options | Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options. |