

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR ELECTRONICS INDUSTRY

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

Contact Us:

Electronics Sector Skill
Council of India
602,604,608,6th floor
Ansal Chambers II,
Bhikaji Cama Place
New Delhi-110066,
India
E-mail:
info@essci-india.org



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Introduction

Qualifications Pack- Field Technician: Air Conditioner

SECTOR/S: ELECTRONICS

SUB-SECTOR: Consumer Electronics

OCCUPATION: After Sales Service

REFERENCE ID: ELE/Q3102

ALIGNED TO: NCO-2004/7233.50

Also, called AC repair Technician, this is an after-sales service job for installing and providing support to the air conditioner buyers.

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 customer's premise to another. Punctuality, amenable behaviour, patience, good interpersonal relationship building, trustworthiness, integrity, and critical thinking are important attributes for this job.

Job Details	Qualifications Pack Code	ELE/Q3102		
	Job Role	Field Technician: Air Conditioner (Applicable for National Scenarios)		
	Credits	TBD	Version number	1.0
	Sector	Electronics	Drafted on	07/11/2013
	Sub-sector	Consumer Electronics	Last reviewed on	24/12/2015
	Occupation	After Sales Service	Next review date	23/12/2016
	NSQC Clearance on	20/07/2015		

Job Role	Field Technician: Air Conditioner Also called AC Technician
Role Description	Install the air conditioner, decipher the symptoms and diagnose the problems in the air conditioner by carrying out basic volt ampere test, earthing check and isolating electro-mechanical faults.
NSQF level	4
Minimum Educational Qualifications	8 th Standard pass, preferably
Maximum Educational Qualifications	ITI/ Diploma (Electrical/Mechanical/ RAC)
Prerequisite License or Training	NA
Minimum Job Entry Age	18 Years
Experience	Minimum 2 years as Helper for 8 th / 9 th passed
Applicable National Occupational Standards (NOS)	Compulsory: <ol style="list-style-type: none"> ELE/N3101 Engage with customer for service ELE/N3108 Install the air conditioner ELE/N3109 Repair dysfunctional air conditioner ELE/N9901 Interact with colleagues Optional: NA
Performance Criteria	As described in the relevant OS units

Definitions

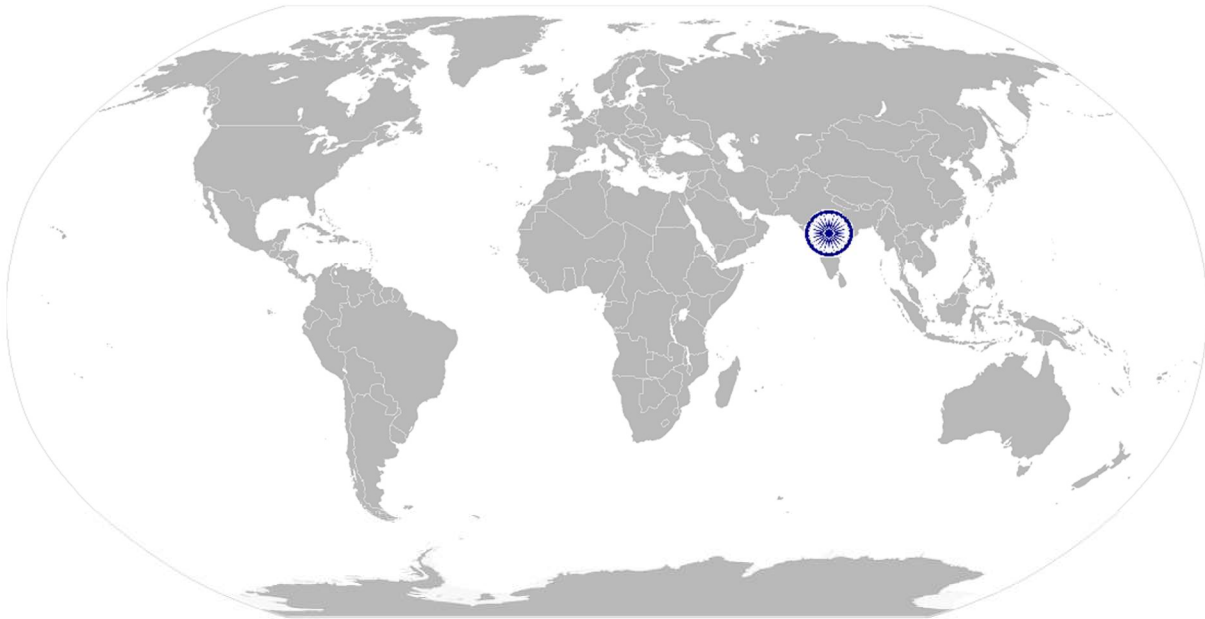
Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further 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.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or an area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Sub-function	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.
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 they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance criteria 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	Knowledge and understanding 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.

Acronyms	Core Skills/ Generic Skills	Core skills or generic skills 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.
	Keywords /Terms	Description
	NOS	National Occupational Standard(s)
	NVQF	National Vocational Qualifications Framework
	NSQF	National Skills Qualifications Framework
	NVEQF	National Vocational Education Qualifications Framework
	QP	Qualifications Pack

ELE/N3101

Engage with customer for service

National Occupational Standard



Overview

This unit is about interacting with customers to understand their requirements and build confidence.

ELE/N3101

Engage with customer for service

National Occupational Standard

Unit Code	ELE/N3101
Unit Title (Task)	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	<p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> 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
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Interact with the customer prior to visit	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC1. check customer complaint registered at customer care or installation schedule</p> <p>PC2. call customer to confirm problem and fix time for visit</p> <p>PC3. greet the customer and confirm the problem registered</p> <p>PC4. be polite and patient when interacting with customer</p> <p>PC5. check about warranty status of appliance and annual maintenance contract</p> <p>PC6. anticipate possible problems to carry tools and parts accordingly</p> <p>PC7. ascertain customer location in order to make the route plan for the day</p>
Interact with customer at their premises	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC8. enquire about the symptoms and history of problems in the appliance</p> <p>PC9. ask about the age of appliance and status of upkeep</p> <p>PC10. identify the problem based on customer's information</p> <p>PC11. communicate the problems identified and educate on possible reasons</p> <p>PC12. inform about costs involved</p>
Suggest possible solutions to customer	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC13. discuss the problem(s) identified with customer</p> <p>PC14. suggest possible solutions and costs involved</p> <p>PC15. explain the time required and methodology for servicing necessary</p> <p>PC16. seek customer's approval on further action</p>
Achieve productivity and quality as per company's norms	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC17. accurately assess the problem and solution(s) necessary</p> <p>PC18. offer most appropriate and cost-effective service as per customer's requirement</p> <p>PC19. communicate problem effectively in order to secure customer's confidence</p> <p>PC20. ensure customer satisfaction and positive feedback</p> <p>PC21. record minimum customer complaints post service</p> <p>PC22. avoid repeat problem post service</p> <p>PC23. prepare most optimum route plan to complete daily target visits</p>

ELE/N3101

Engage with customer for service

Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company /organization and its processes)	The user/individual on the job needs to know and understand: KA1. company's policies on: customer care KA2. company's code of conduct KA3. organisation culture and typical customer profile KA4. company's reporting structure KA5. company's documentation policy
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. company's products and recurring problems reported in consumer appliances KB2. how to communicate with customers in order to put them at ease KB3. basic electrical and mechanical modules of various appliances KB4. electronics involved in the type of appliance KB5. models of different appliances and their common and distinguishing features KB6. functionality of different features of appliances and new features KB7. etiquette to be followed at customer's premises KB8. precautions to be taken while handling field calls and dealing with customers KB9. relevant reference sheets, manuals and documents to carry in the field KB10. importance of personal grooming KB11. how to be polite and courteous under all circumstances KB12. importance of maintaining clean surface/work area KB13. when to call customer care and close the call after work is done to customer's satisfaction and documentation is complete
Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. complete forms such as work orders, invoices, maintenance records SA2. note problems on job sheet and details of work done
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA3. read warnings, instructions and other text material on product labels, components, etc. SA4. read job sheets or work orders SA5. read product and module serial numbers and interpret details such as make, date, availability
	Oral Communication (Listening and Speaking skills)
	The user/ individual on the job needs to know and understand how to: SA6. receive and ask for clarifications from supervisor on the job requirement SA7. listen carefully to customer and interpret customer's statement of symptoms SA8. communicate in local language SA9. educate and inform customer about product, contractual issues such as warranty, cost of service and module replacement SA10. educate on precautions to be taken in order to avoid recurrence of problem

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Engage with customer for service

B. Professional Skills	Decision Making
	The user/individual on the job needs to know and understand how to: SB1. follow standard operating procedures while making decisions SB2. take approval from supervisor in case the decision has to be made for exceptions
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB3. work with supervisor and co-workers to achieve smooth workflow SB4. work with superiors and co-workers to share knowledge and learning
	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB5. maintain personal grooming SB6. be polite, patient and courteous under all circumstances with all types of customers SB7. decide on the spot on whether interaction of customer with superior is necessary or not SB8. maintain proper etiquette including the appropriate physical distance with customer during conversation, not entering bedroom without permission SB9. put customer at ease and generate customer's confidence
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB10. seek inputs at assess the problems
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB11. interpret accurately drawings, wiring and job specifications/instructions
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB12. improve work processes

ELE/N3101

Engage with customer for service

NOS Version Control

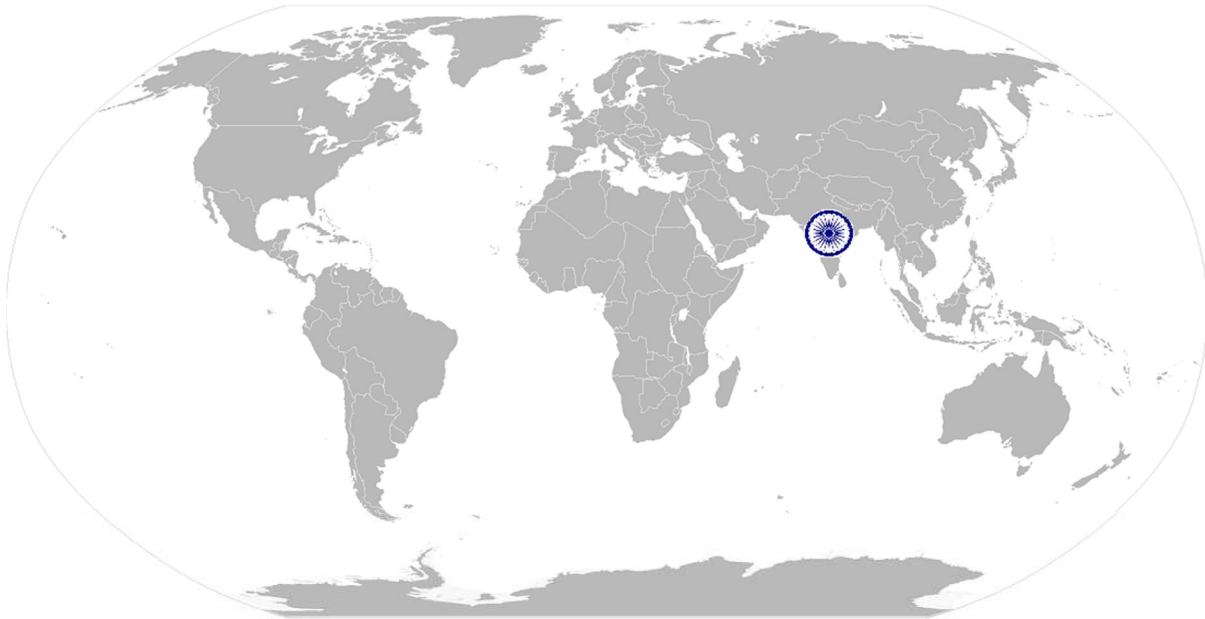
NOS Code	ELE/N3101		
Credits	TBD	Version number	1.0
Industry	Electronics	Drafted on	07/11/2013
Industry Sub-sector	Consumer Electronics	Last reviewed on	24/12/2015
Occupation	After Sales Service	Next review date	23/12/2016



ELE/N3108

Install the air conditioner

National Occupational Standard



Overview

This unit is about installing the newly-purchased air conditioner at customer's premises.

ELE/N3108

Install the air conditioner

National Occupational Standard	Unit Code	ELE/N3108
	Unit Title (Task)	Install the air conditioner
	Description	This OS unit is about installing the newly purchased air conditioner at customer's location and make it ready to use.
	Scope	<p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> 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
	Performance Criteria(PC) w.r.t. the Scope	
Element		Performance Criteria
Undertake pre-installation site visit		<p>To be competent, the user / individual on the job must be able to:</p> <p>PC1. visit the customer's premise before carrying out the installation</p> <p>PC2. interact with the customer to understand where the air conditioner is to be installed, i.e., window, split, high, low, etc.</p> <p>PC3. check that the location meets structural requirements such as distance from power supply, distance from windows/doors being opened frequently</p> <p>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</p> <p>PC5. make necessary markings for placement of indoor and outdoor units</p> <p>PC6. seek appointment for the next visit</p>
Remove packaging and check accessories		<p>To be competent, the user / individual on the job must be able to:</p> <p>PC7. remove the air conditioner packaging in which it was shipped to customer from point of sale/ warehouse</p> <p>PC8. check that the product matches the customer order in terms of colour and make</p> <p>PC9. check that all supporting accessories purchased have are there in the pack</p> <p>PC10. check that tools and fitments required for the installation are available</p> <p>PC11. clear up the packaging material waste and dispose as per company's norms</p>
Place the air conditioner at identified location		<p>To be competent, the user / individual on the job must be able to:</p> <p>PC12. check if pre-installation requirements are met</p> <p>PC13. maintain required distance from door/window</p> <p>PC14. make measurements at the location identified and drill holes ensuring no internal wiring damage takes place</p> <p>PC15. mount the indoor unit and ensure that the screws are fastened securely</p> <p>PC16. place the outdoor unit at a suitable location and attach it firmly to wall/floor</p>

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Install the air conditioner

	<p>PC17. connect the indoor and the outdoor units using the field copper pipe of appropriate size and interconnecting cables</p> <p>PC18. fill in additional gas if the distance between the indoor and the outdoor units is more than what is recommended</p>
Check air conditioner's functioning	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC19. make necessary power supply connections</p> <p>PC20. align the air conditioner as per the instructions manual</p> <p>PC21. demonstrate the features and utility</p> <p>PC22. explain the precautions to be taken while using the air conditioner</p>
Complete the documentation	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC23. fill in customer acknowledgement form</p> <p>PC24. seek customer's signature</p> <p>PC25. complete other documentation for recording completion of installation</p> <p>PC26. call customer care and inform about job completed</p>
Interact with supervisor or superior	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC27. understand the work requirement from superior, periodically</p> <p>PC28. report to superior on the work completed</p> <p>PC29. escalate the customer issues and problems that are unresolved in the field</p> <p>PC30. document the work completed on the company ERP software for tracking and future references</p>
Achieve productivity and quality as per company's norms	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC31. remove packaging without damage to the air conditioner unit and accessories</p> <p>PC32. position air conditioner as per requirements specified in instructions manual</p> <p>PC33. educate customer on importance of proper placing</p> <p>PC34. inform about switching off the unit during voltage fluctuations and use of stabilizers, if necessary</p> <p>PC35. carry and use the correct tools and equipment for installation</p> <p>PC36. operate and check that they are in a safe and stable condition</p> <p>PC37. complete installation in time target given</p> <p>PC38. educate customer on proper operation and maintenance procedures</p> <p>PC39. complete daily field schedule as per instructions/format within the designated time</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company /organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. company's policies on: incentives, delivery standards, and personnel management, call closure</p> <p>KA2. company's sales, installation and after sales support policy</p> <p>KA3. importance of the individual's role in the workflow</p> <p>KA4. reporting structure</p> <p>KA5. company's policy on product's warranty and other terms and conditions</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. installation-site requirements (structural requirements, ventilation, etc.)</p> <p>KB2. different types of air conditioners such as window, split, cassette etc.</p> <p>KB3. different features and functionalities of various models</p> <p>KB4. safety precautions to be taken while installing</p>

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Install the air conditioner

	<p>KB5. manual-based procedure of installing the air conditioner</p> <p>KB6. packaging waste disposal procedures</p> <p>KB7. use of test equipment and tools such as multi-meter, oscilloscope</p> <p>KB8. other products of the company</p> <p>KB9. safety rules, policies and procedures</p> <p>KB10. quality standards to be followed</p> <p>KB11. how the refrigeration cycle works</p> <p>KB12. how to operate the air conditioner and use the various features</p> <p>KB13. how to fix various accessories and parts that have accompanied the unit</p> <p>KB14. how to check features and functionalities after installation</p> <p>KB15. how to operate tools such as screw drivers, electric drill for installation</p> <p>KB16. how to make appropriate settings after plugging in</p>
Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document the completed work on computer and paper</p> <p>SA2. note problems on job sheet and details of work done</p>
	Reading Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA3. read job sheet for installation as registered by customer care/ company's ERP system</p> <p>SA4. read the standard operating procedures for different types of air conditioner</p> <p>SA5. read about different types of air conditioners, their basic electro-mechanical structure and functionality of features</p>
	Oral Communication (Listening and Speaking skills)
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA6. receive and ask for clarifications from supervisor on the job requirement</p> <p>SA7. listen carefully to customer and interpret customer's statement of symptoms</p> <p>SA8. communicate in local language</p> <p>SA9. educate and inform customer about product, contractual issues such as warranty, cost of service and module replacement</p> <p>SA10. educate on precautions to be taken in order to avoid recurrence of problem</p>
B. Professional Skills	Decision Making
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. follow standard operating procedures while making decisions</p> <p>SB2. take approval from supervisor in case the decision has to be made for exceptions</p>
	Plan and Organize
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. share work load as required</p> <p>SB4. achieve the targets given on installation per day or month</p>
	Customer Centricity
	<p>The user/individual on the job needs to know and understand how to:</p>

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Install the air conditioner

	SB5. report on any customer concerns to superiors without delay
	SB6. maintain personal grooming
	SB7. be polite, patient and courteous under all circumstances with all types of customers
	SB8. decide on the spot on whether interaction of customer with superior is necessary or not
	SB9. maintain proper etiquette including the appropriate physical distance with customer during conversation, not entering bedroom without permission
	SB10. put customer at ease and generate customer's confidence
	Problem Solving
	The user/individual on the job needs to know and understand how to:
	SB11. spot process disruptions and delays
	SB12. seek inputs at assess the problems
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to:
	SB13. reduce repetition of errors in installation
	Critical Thinking
	The user/ individual on the job needs to know and understand how to:
	SB14. improve work processes

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Install the air conditioner

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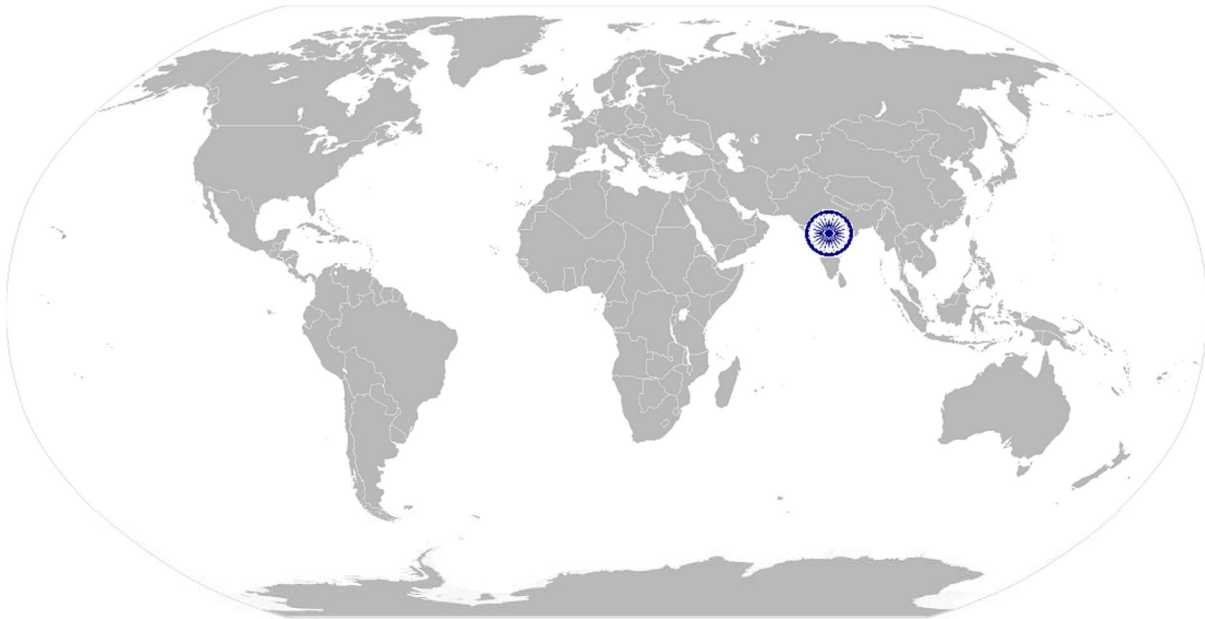
NOS Code	ELE/N3108		
Credits	TBD	Version number	1.0
Industry	Electronics	Drafted on	07/11/2013
Industry Sub-sector	Consumer Electronics	Last reviewed on	24/12/2015
Occupation	After Sales Service	Next review date	23/12/2016



ELE/N3109

Repair dysfunctional air conditioner

National Occupational Standard



Overview

This unit is about moving from one customer's premise to another in order to rectify faults in dysfunctional air conditioner as recorded by the customer with customer care unit.

ELE/N3109

Repair dysfunctional air conditioner

National Occupational Standard

Unit Code	ELE/N3109
Unit Title (Task)	Repair dysfunctional air conditioner
Description	This OS unit is about understanding the customer's complaints, identifying the fault and fixing the air conditioner.
Scope	<p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> 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
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Understand the symptoms in the air-conditioner and identify the fault	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC1. understand usage pattern of the air conditioner from the customer</p> <p>PC2. diagnose the fault based on customer interaction and initial inspection</p> <p>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</p> <p>PC4. separate and inspect every module of the unit if the fault is not identified through basic tests</p> <p>PC5. send to factory for in depth diagnosis, if problem remains un-identified at site</p>
Replace dysfunctional module in the air conditioner unit	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC6. replace component at location, if the fault identified is because of damage of components such as relay or thermostat</p> <p>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</p> <p>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</p>
Confirm functionality of the repaired unit	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC9. reassemble the unit</p> <p>PC10. switch on power supply and confirm that unit is functioning</p> <p>PC11. check that all the modules of the unit work as per specifications</p> <p>PC12. demonstrate and confirm functionality of the unit with customer</p> <p>PC13. educate the customer about cleaning procedures and other best practices</p> <p>PC14. collect necessary payments from the customer, if applicable</p> <p>PC15. fill in customer acknowledgement form</p> <p>PC16. complete other documentation procedures to record complaint closure</p>
Achieve productivity and quality as per company's norms	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC17. ensure damage free handling of the unit</p> <p>PC18. diagnose the problem accurately and in assigned time</p>

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Repair dysfunctional air conditioner

	<p>PC19. identify the problem modules accurately such as the power supply, compressor, fan motors, PCB</p> <p>PC20. fix the dysfunctional air conditioner in designated time</p> <p>PC21. rectify completely to avoid repeat fault in the air conditioner</p> <p>PC22. record minimum customer complaints post service</p> <p>PC23. meet daily target on attending to number of complaints</p> <p>PC24. select the right spares according to recorded complaints at the customer care</p> <p>PC25. clearly communicate type of module required to the service centre, if a faulty module is to be replaced</p> <p>PC26. secure repairs completion receipt from customer</p> <p>PC27. educate customer on air conditioner maintenance and correct practices to follow in order to avoid further problems</p> <p>PC28. ensure 100% customer satisfaction</p> <p>PC29. recover payments as per rate sheet/ communication from customer care</p> <p>PC30. sell related products such as new equipment or Annual Maintenance Contracts (AMC) as per company policy</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company /organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. company's policies on: incentives, delivery standards and personnel management and customer service standards</p> <p>KA2. reporting and documentation processes</p> <p>KA3. air conditioner manufacturing capabilities of the organization</p> <p>KA4. importance of the individual's role in the system</p> <p>KA5. reporting structure</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. different types of air conditioners, e.g., window, split air, cassette conditioners and differences in their operation</p> <p>KB2. features of different air conditioners of the company</p> <p>KB3. functioning of the appliance and its various modules</p> <p>KB4. method of air conditioning, its use and functioning of sealed system</p> <p>KB5. 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</p> <p>KB6. types of brazing torches, types of fluxes and their application</p> <p>KB7. basic electronics (knowledge of components such as diode, transformer, LED, photo transistor, capacitor, resistor, inductor, thermistors)</p> <p>KB8. functioning of various electromechanical parts of the air conditioner</p> <p>KB9. 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</p> <p>KB10. troubleshooting knowledge with respect to air conditioners</p> <p>KB11. hazards, their causes and prevention/personal safety</p> <p>KB12. frequently occurring faults such as poor/no cooling, noisy unit, condensation water over flowing</p> <p>KB13. components/modules of the air conditioner and their prices</p>

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Repair dysfunctional air conditioner

	<p>KB14. energy ratings such BEE rating and concepts of e waste</p> <p>KB15. other products of the company</p> <p>KB16. how to operate computers and software installed</p> <p>KB17. how to operate/use multi-meter, clamp meter, tube cutter, tube bender, vacuum pump, weigh scale, gas cylinder, temperature meter, pressure gauges</p> <p>KB18. 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</p> <p>KB19. 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</p> <p>KB20. how to detect defects in the compressor such as electrical faults, compressor over load, jamming/noise</p> <p>KB21. 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</p> <p>KB22. how to detect problems in the condenser such as clogging in the condenser, tubes touching each other</p> <p>KB23. 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.</p>
Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. document completion note for customer</p> <p>SA2. record completion information in the ERP system</p> <p>SA3. note problems on job sheet and details of work done</p>
	Reading Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA4. read warnings, instructions and other text material on product labels, and components</p> <p>SA5. read job sheet and complaints</p> <p>SA6. read product operating manuals</p> <p>SA7. read and understand electrical and electronic symbols, multiples and SI units</p>
	Oral Communication (Listening and Speaking skills)
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA8. interact with customer to understand the problem faced</p> <p>SA9. market and sell accessories and products of the company</p> <p>SA10. importance of communicating in language</p> <p>SA11. importance of behavioural precautions and etiquette while dealing with customer</p> <p>SA12. be polite, patient and punctual</p>
B. Professional Skills	Decision Making

ELE/N3109

Repair dysfunctional air conditioner

	The user/individual on the job needs to know and understand how to: SB1. follow standard operating procedures while making decisions SB2. take approval from supervisor in case the decision has to be made for exceptions
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB3. share work load as required SB4. achieve the targets given on installation per day or month
	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB5. report on any customer concerns to superiors without delay SB6. maintain personal grooming SB7. be polite, patient and courteous under all circumstances with all types of customers SB8. decide on the spot on whether interaction of customer with superior is necessary or not SB9. maintain proper etiquette including the appropriate physical distance with customer during conversation, not entering bedroom without permission SB10. put customer at ease and generate customer's confidence
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB11. spot process disruptions and delays SB12. seek inputs at assess the problems SB13. match symptoms of the fault noticed to the cause of the problem SB14. anticipate and avoid hazards that may occur during repairs because of tools, materials used or repair processes
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB15. reduce repetition of errors in installation
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB16. improve work processes

ELE/N3109

Repair dysfunctional air conditioner

NOS Version Control

NOS Code	ELE/N3109		
Credits	TBD	Version number	1.0
Industry	Electronics	Drafted on	07/11/2013
Industry Sub-sector	Consumer Electronics	Last reviewed on	24/12/2015
Occupation	After Sales Service	Next review date	23/12/2016



ELE/N9901

Interact with colleagues

National Occupational Standard



Overview

This unit is about the individual's level of communication with colleagues and other departments within the organisation. It determines the ability to work as a team member to achieve the required deliverables on schedule.

ELE/N9901

Interact with colleagues

National Occupational Standard

Unit Code	ELE/N9901
Unit Title (Task)	Interact with colleagues
Description	This OS unit is about communicating with colleagues and seniors in order to achieve smooth work flow.
Scope	<p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> Interact with supervisor or superior Coordinate with colleagues
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Interact with supervisor or superior	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC1. understand work requirements, targets and incentives</p> <p>PC2. learn about new product models, their features and functions</p> <p>PC3. report problems identified in the field</p> <p>PC4. escalate customer concerns that cannot be handled on field</p> <p>PC5. resolve personnel issues</p> <p>PC6. receive feedback on work standards and customer satisfaction</p> <p>PC7. communicate any potential hazards at a particular location</p> <p>PC8. meet given targets</p> <p>PC9. deliver work of expected quality despite constraints</p> <p>PC10. have feedback from a happy and satisfied customer</p>
Coordinate with colleagues	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC11. resolve inter-personnel conflicts and achieve smooth workflow</p> <p>PC12. receive spares from tool room or stores</p> <p>PC13. deposit faulty modules and tools to stores</p> <p>PC14. pass on customer complaints to colleagues in a respective geographical area</p> <p>PC15. assist colleagues with resolving field problems</p> <p>PC16. clearly demarcate roles of each team member</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. company's policies on: incentives, delivery standards, and personnel management</p> <p>KA2. importance of the individual's role in the workflow</p> <p>KA3. reporting structure</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. how to communicate effectively</p> <p>KB2. how to build team coordination</p>

ELE/N9901

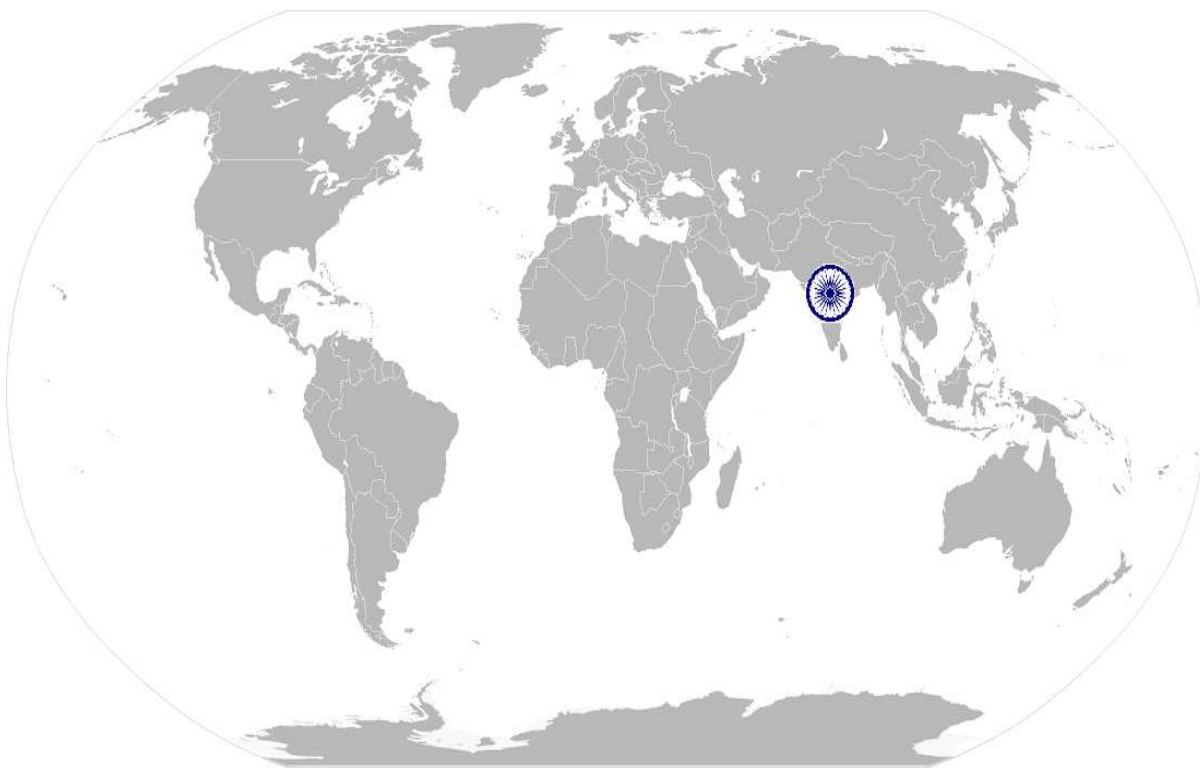
Interact with colleagues

Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. complete forms such as work orders, invoices, maintenance records SA2. note problems on job sheet and details of work done
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA3. read warnings, instructions and other text material on product labels, components, etc. SA4. read job sheets or work orders SA5. read product and module serial numbers and interpret details such as make, date, availability
	Oral Communication (Listening and Speaking skills)
	The user/ individual on the job needs to know and understand how to: SA6. receive and ask for clarifications from supervisor on the job requirement SA7. listen carefully to customer and interpret customer's statement of symptoms SA8. communicate in local language SA9. educate and inform customer about product, contractual issues such as warranty, cost of service and module replacement SA10. educate on precautions to be taken in order to avoid recurrence of problem
B. Professional Skills	Decision Making
	The user/individual on the job needs to know and understand how to: SB1. follow standard operating procedures while making decisions SB2. take approval from supervisor in case the decision has to be made for exceptions
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB3. work with supervisor and co-workers to achieve smooth workflow SB4. work with superiors and co-workers to share knowledge and learning
	Customer Centricity
	The user/individual on the job needs to know and understand how to: SB5. maintain personal grooming SB6. be polite, patient and courteous under all circumstances with all types of customers SB7. decide on the spot on whether interaction of customer with superior is necessary or not SB8. maintain proper etiquette including the appropriate physical distance with customer during conversation, not entering bedroom without permission SB9. put customer at ease and generate customer's confidence
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB10. seek inputs at assess the problems

ELE/N9901

Interact with colleagues

	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB11. interpret accurately drawings, wiring and job specifications/instructions
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB12. improve work processes



ELE/N9901

Interact with colleagues

NOS Version Control

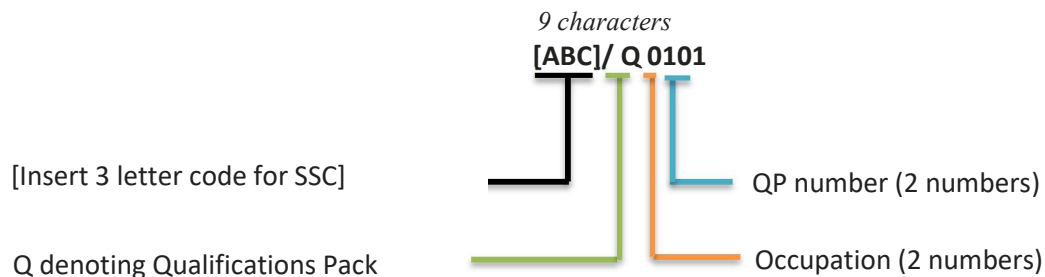
NOS Code	ELE/N9901		
Credits	TBD	Version number	1.0
Industry	Electronics	Drafted on	07/11/2013
Industry Sub-sector	Consumer Electronics	Last reviewed on	24/12/2015
Occupation	After Sales Service	Next review date	23/12/2016



Annexure

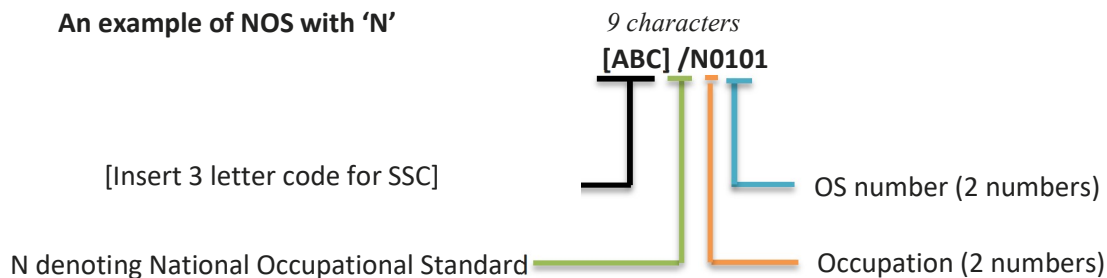
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



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The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Passive Components	01 - 10
Semiconductors	11 - 20
PCB Manufacturing	21 - 30
Consumer Electronics	31 - 40
IT Hardware	41 - 50
PCB Assembly	51 - 55
Solar Electronics	56 - 60
Strategic Electronics	61 - 65
Automotive Electronics	66 - 70
Industrial Electronics	71 - 75
Medical Electronics	76 - 80
Communication Electronics	81 - 85
PCB Design	86 - 90
LED	91 - 95

Sequence	Description	Example
Three letters	Electronics	ELE
Slash	/	/
Next letter	Whether QP or NOS	Q
Next two numbers	Occupation code	01
Next two numbers	OS number	01

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role: Field Technician: Air Conditioner

Qualification Pack: ELE/Q3102

Sector Skill Council: Electronics Sector Skill Council of India

Guidelines for Assessment:

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. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below.)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on this criteria.
5. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS.
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.
7. In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification Pack.

Assessable Outcomes	Assessment Criteria	Total Marks	Out of	Theory	Practical Skills
ELE/N3101 Engage with customer for service	PC1. check customer complaint registered at customer care or installation schedule	100	3	1	2
	PC2. call customer to confirm problem and fix time for visit		4	2	2
	PC3. greet the customer and confirm the problem registered		4	2	2
	PC4. be polite and patient when interacting with customer		4	2	2
	PC5. check about warranty status of appliance and annual maintenance contract		3	1	2
	PC6. anticipate possible problems to carry tools and parts accordingly		4	2	2
	PC7. ascertain customer location in order to make the route plan for the day		3	1	2
	PC8. enquire about the symptoms and history of problems in the appliance		5	2	3

	PC9. ask about the age of appliance and status of upkeep		5	2	3
	PC10. identify the problem based on customer's information		5	2	3
	PC11. communicate the problems identified and educate on possible reasons		5	2	3
	PC12. inform about costs involved		5	2	3
	PC13. discuss the problem(s) identified with customer		6	3	3
	PC14. suggest possible solutions and costs involved		6	3	3
	PC15. explain the time required and methodology for servicing necessary		7	3	4
	PC16. seek customer's approval on further action		6	3	3
	PC17. accurately assess the problem and solution(s) necessary		3	1	2
	PC18. offer most appropriate and cost-effective service as per customer's requirement		3	1	2
	PC19. communicate problem effectively in order to secure customer's confidence		4	1	3
	PC20. ensure customer satisfaction and positive feedback		4	1	3
	PC21. record minimum customer complaints post service		3	1	2
	PC22. avoid repeat problem post service		4	1	3
	PC23. prepare most optimum route plan to complete daily target visits		4	1	3
		Total	100	40	60
ELE/N3108 Install the air conditioner	PC1.visit the customer's premise before carrying out the installation	100	2	1	1
	PC2.interact with the customer to understand where the air conditioner is to be installed, i.e., window, split, high, low, etc.		2	1	1
	PC3.check that the location meets structural requirements such as distance from power supply, distance from windows/doors being opened frequently		2	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		2	1	1

PC5.make necessary markings for placement of indoor and outdoor units	2	1	1
PC6.seek appointment for the next visit	2	1	1
PC7.remove the air conditioner packaging in which it was shipped to customer from point of sale/ warehouse	2	1	1
PC8.check that the product matches the customer order in terms of colour and make	2	1	1
PC9.check that all supporting accessories purchased have are there in the pack	2	1	1
PC10.check that tools and fitments required for the installation are available	2	1	1
PC11.clear up the packaging material waste and dispose as per company's norms	2	1	1
PC12.check if pre-installation requirements are met	2	1	1
PC13.maintain required distance from door/window	2	1	1
PC14.make measurements at the location identified and drill holes ensuring no internal wiring damage takes place	2	1	1
PC15.mount the indoor unit and ensure that the screws are fastened securely	2	1	1
PC16.place the outdoor unit at a suitable location and attach it firmly to wall/floor	2	1	1
PC17.connect the indoor and the outdoor units using the field copper pipe of appropriate size and interconnecting cables	2	1	1
PC18.fill in additional gas if the distance between the indoor and the outdoor units is more than what is recommended	2	1	1
PC19.make necessary power supply connections	4	1	3
PC20.align the air conditioner as per the instructions manual	4	1	3
PC21.demonstrate the features and utility	4	1	3
PC22.explain the precautions to be taken while using the air conditioner	4	1	3
PC23.fill in customer acknowledgement form	3	1	2
PC24.seek customer's signature	2	1	1

	PC25.complete other documentation for recording completion of installation		3	1	2
	PC26.call customer care and inform about job completed		2	1	1
	PC27.understand the work requirement from superior, periodically		4	1	3
	PC28.report to superior on the work completed		4	1	3
	PC29.escalate the customer issues and problems that are unresolved in the field		4	1	3
	PC30.document the work completed on the company ERP software for tracking and future references		4	2	2
	PC31.remove packaging without damage to the air conditioner unit and accessories		5	2	3
	PC32.position air conditioner as per requirements specified in instructions manual		5	2	3
	PC33.educate customer on importance of proper placing		2	1	1
	PC34.inform about switching off the unit during voltage fluctuations and use of stabilizers, if necessary		2	1	1
	PC35.carry and use the correct tools and equipment for installation		2	1	1
	PC36.operate and check that they are in a safe and stable condition		1	0	1
	PC37.complete installation in time target given		1	0	1
	PC38.educate customer on proper operation and maintenance procedures		2	1	1
	PC39.complete daily field schedule as per instructions/format within the designated time		2	1	1
		Total	100	40	60
ELE/N3109 Repair dysfunctional air conditioner	PC1.understand usage pattern of the air conditioner from the customer	100	4	2	2
	PC2.diagnose the fault based on customer interaction and initial inspection		4	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		4	2	2

PC4.separate and inspect every module of the unit if the fault is not identified through basic tests	4	2	2
PC5.send to factory for in depth diagnosis, if problem remains un-identified at site	4	2	2
PC6.replace component at location, if the fault identified is because of damage of components such as relay or thermostat	10	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	10	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	10	4	6
PC9.reassemble the unit	3	1	2
PC10.switch on power supply and confirm that unit is functioning	3	1	2
PC11.check that all the modules of the unit work as per specifications	3	1	2
PC12.demonstrate and confirm functionality of the unit with customer	4	2	2
PC13.educate the customer about cleaning procedures and other best practices	4	2	2
PC14.collect necessary payments from the customer, if applicable	3	1	2
PC15.fill in customer acknowledgement form	3	1	2
PC16.complete other documentation procedures to record complaint closure	3	1	2
PC17.ensure damage free handling of the unit	1	0	1
PC18.diagnose the problem accurately and in assigned time	2	1	1
PC19.identify the problem modules accurately such as the power supply, compressor, fan motors, PCB	3	1	2
PC20.fix the dysfunctional air conditioner in designated time	2	1	1
PC21.rectify completely to avoid repeat fault in the air conditioner	2	1	1

	PC22.record minimum customer complaints post service		1		1
	PC23.meet daily target on attending to number of complaints		1	0	1
	PC24.select the right spares according to recorded complaints at the customer care		1	0	1
	PC25.clearly communicate type of module required to the service centre, if a faulty module is to be replaced		2	1	1
	PC26.secure repairs completion receipt from customer		2	1	1
	PC27.educate customer on air conditioner maintenance and correct practices to follow in order to avoid further problems		3	1	2
	PC28.ensure 100% customer satisfaction		2	1	1
	PC29.recover payments as per rate sheet/ communication from customer care		1	0	1
	PC30.sell related products such as new equipment or Annual Maintenance Contracts (AMC) as per company policy		1	0	1
	Total		100	40	60
ELE/N9901 Interact with colleagues	PC1. understand work requirements, targets and incentives	100	5	2	3
	PC2. learn about new product models, their features and functions		5	2	3
	PC3. report problems identified in the field		5	2	3
	PC4. escalate customer concerns that cannot be handled on field		6	2	4
	PC5. resolve personnel issues		5	2	3
	PC6. receive feedback on work standards and customer satisfaction		5	2	3
	PC7. communicate any potential hazards at a particular location		5	2	3
	PC8. meet given targets		5	2	3
	PC9. deliver work of expected quality despite constraints		5	2	3
	PC10. Have feedback from a happy and satisfied customer		5	2	3
	PC11. resolve inter-personnel conflicts and achieve smooth workflow		8	3	5

	PC12. receive spares from tool room or stores		8	3	5
	PC13. deposit faulty modules and tools to stores		8	3	5
	PC14. pass on customer complaints to colleagues in a respective geographical area		8	3	5
	PC15. assist colleagues with resolving field problems		9	4	5
	PC16. clearly demarcate roles of each team member		8	4	4
		Total	100	40	60