

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

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Introduction

Qualifications Pack- TV Repair Technician

SECTOR: ELECTRONICS

SUB-SECTOR: CONSUMER ELECTRONICS

OCCUPATION: AFTER SALES SERVICE

REFERENCE ID: ELE/Q3101

ALIGNED TO: NCO-2015/ 7421.1301

TV Repair Technician: Also, called 'Field Technician – TV', the TV Repair Technician provides after sales service to customers.

Brief Job Description: The individual at work interacts with customers to install the TV as well as diagnose the problem and assess possible causes of fault reported. 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.

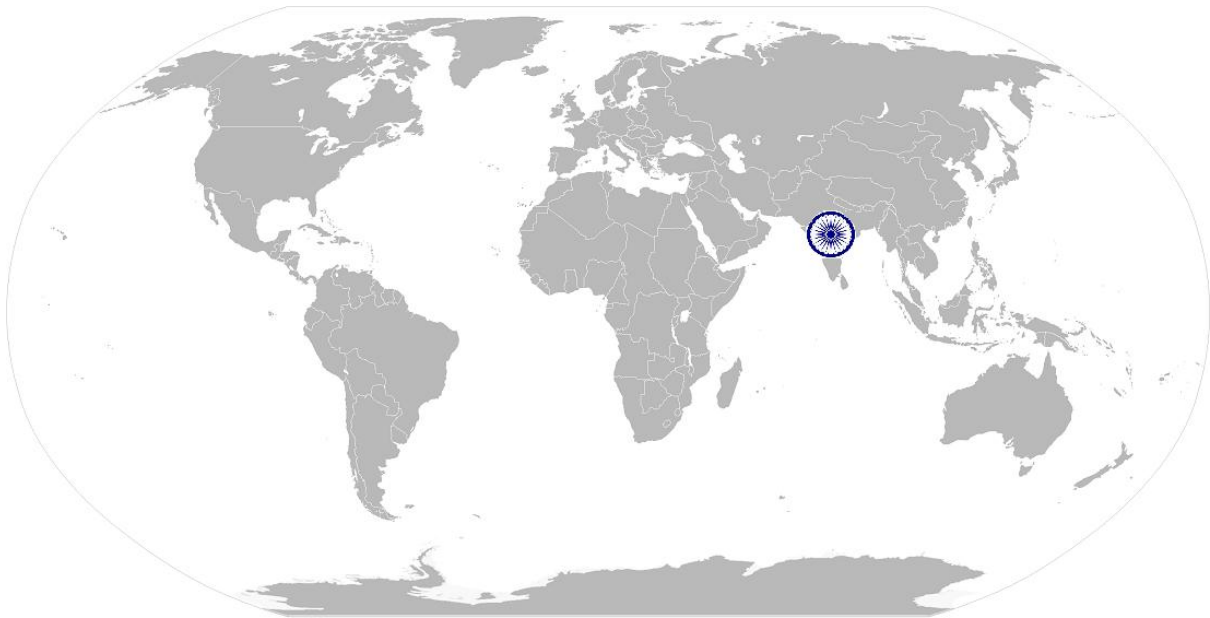
Job Details	Qualifications Pack Code	ELE/Q3101		
	Job Role	TV Repair Technician		
	Credits(NSQF)	TBD	Version number	1.0
	Sector	Electronics	Drafted on	22/11/13
	Sub-sector	Consumer Electronics	Last reviewed on	24/12/13
	Occupation	After Sales Service	Next review date	30/06/16
	NSQC Clearance on	22/04/15		

Job Role	TV Repair Technician Also called 'Field Technician - TV'
Role Description	Install the TV, decipher the symptoms and diagnose the problems in the TV by inspecting its various modules and sections depending on the type of the television set such as CRT/LED/LCD
NSQF level	4
Minimum Educational Qualifications	8 th Standard passed
Maximum Educational Qualifications	ITI/Diploma (Electrical or Electronics)
Training	Not Applicable
Minimum Job Entry Age	18 years
Experience	Minimum 2 years as helper for 8 th / 9 th passed
Applicable National Occupational Standards (NOS)	<p>Compulsory:</p> <ol style="list-style-type: none"> ELE/N3101 Engage with customer for service ELE/N3102 Install the television set ELE/N3103 Repair dysfunctional CRT TV set ELE/N3104 Repair dysfunctional Flat Panel Display (FPD) TV set ELE/N9901 Interact with colleagues <p>Optional: Not applicable</p>
Performance Criteria	As described in the relevant OS units

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

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
Interacting with customer prior to visit	<p>To be competent, the user/ individual 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>
Interacting with customer at their premises	<p>To be competent, the user/ individual 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>
Suggesting possible solutions to customer	<p>To be competent, the user/ individual 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>
Achieving productivity and quality	<p>To be competent, the user/ individual 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>

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Engage with customer for service

	<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>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The individual on the job needs to know and understand:</p> <p>KA1. company's policies on: customer care</p> <p>KA2. company's code of conduct</p> <p>KA3. organisation culture and typical customer profile</p> <p>KA4. company's reporting structure</p> <p>KA5. company's documentation policy</p>
B. Technical Knowledge	<p>The individual on the job needs to know and understand:</p> <p>KB1. company's products and recurring problems reported in consumer appliances</p> <p>KB2. how to communicate with customers in order to put them at ease</p> <p>KB3. basic electrical and mechanical modules of various appliances</p> <p>KB4. electronics involved in the type of appliance</p> <p>KB5. models of different appliances and their common and distinguishing features</p> <p>KB6. functionality of different features of appliances and new features</p> <p>KB7. etiquette to be followed at customer's premises</p> <p>KB8. precautions to be taken while handling field calls and dealing with customers</p> <p>KB9. relevant reference sheets, manuals and documents to carry in the field</p>
Skills (S)	
A. Core Skills/ Generic Skills	Reading and writing skills
	<p>The individual on the job needs to know and understand:</p> <p>SA1. how to read product and module serial numbers and interpret details such as make, date, availability</p> <p>SA2. how to note problems on job sheet and details of work done</p>
B. Professional Skills	Interpersonal skills
	<p>The individual on the job needs to know and understand how:</p> <p>SB1. to put customer at ease and generate customer's confidence</p> <p>SB2. to listen carefully and interpret their statement of symptoms</p>
	Communication skills
	<p>The individual on the job needs to know and understand how:</p> <p>SB3. to seek inputs at assess the problems</p> <p>SB4. how to communicate in local language</p> <p>SB5. how to educate and inform customer about contractual issues such as warranty, cost of service and module replacement</p> <p>SB6. to educate on precautions to be taken post repairs to avoid recurrence of problem</p>

ELE/N3101

Engage with customer for service

	Behavioural skills
	<p>The individual on the job needs to know and understand:</p> <p>SB7. importance of personal grooming</p> <p>SB8. significance of etiquette such as maintaining the appropriate physical distance with customer during conversation, not entering bedroom without permission</p> <p>SB9. importance of being patient and courteous with all types of customers</p> <p>SB10. being polite and courteous under all circumstances</p> <p>SB11. importance of maintaining clean surface/work area</p>
	Decision making skills
	<p>SB12. decide on the spot on whether interaction of customer with supervisor is necessary or not</p> <p>SB13. when to call customer care and close the call after work is done to customer's satisfaction and documentation is complete</p>

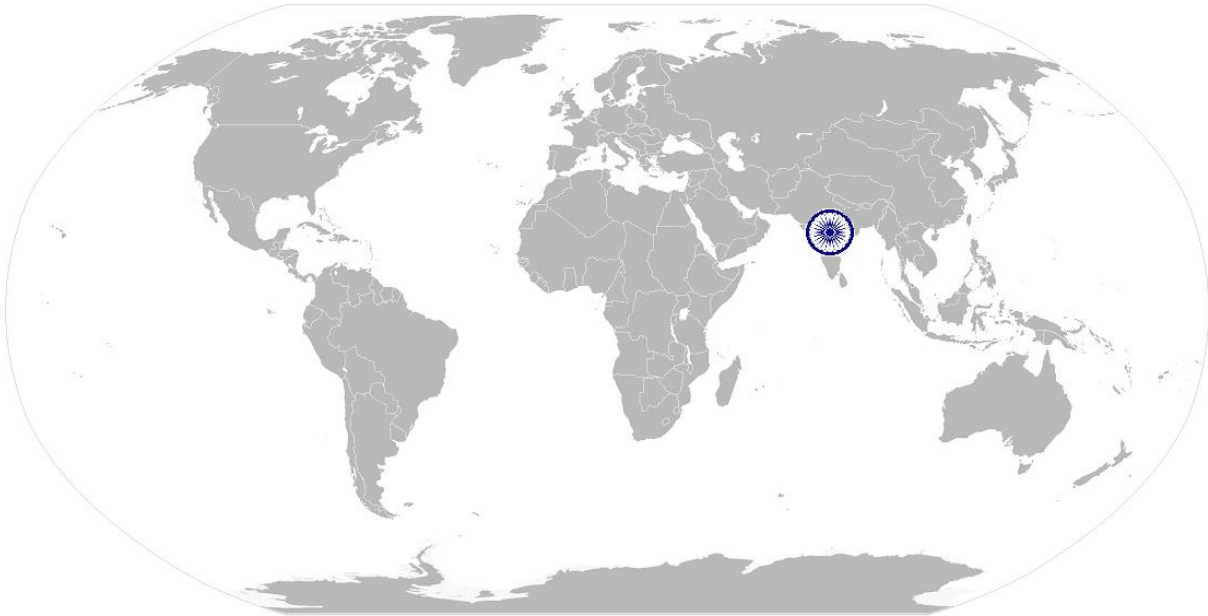
ELE/N3101

Engage with customer for service

NOS Version Control

NOS Code	ELE/N3101		
Credits(NSQF)	TBD	Version number	1.0
Industry	Electronics	Drafted on	07/11/13
Industry Sub-sector	Consumer Electronics	Last reviewed on	24/12/13
Occupation	After Sales Service	Next review date	30/06/16

National Occupational Standard



Overview

This unit is about installing the newly purchased TV set at customer's premises.

ELE/N3102

Install the television set

Unit Code	ELE /N3102
Unit Title (Task)	Install the TV set
Description	This OS unit is about installing the newly purchased TV set 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"> Remove packaging and check accessories Fix the TV set at appropriate location Check TV set's functioning Complete documentation Interact with superior
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Removing packaging and placing	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. remove the television set packaging in which it was shipped to customer without damage to TV set and accessories</p> <p>PC2. check that the product matches the customer order in terms of model and make</p> <p>PC3. check that all supporting accessories purchased are there in the pack</p> <p>PC4. check tools and fitments required for the installation are available</p> <p>PC5. clear up the packaging material waste and dispose as per company's norms</p>
Fixing TV set's location	<p>To be competent, the user/ individual must be able to:</p> <p>PC6. seek customer's input on placement of television set</p> <p>PC7. take necessary measurements from the floor and the sides of the wall for drilling holes (if applicable)</p> <p>PC8. make necessary wire concealing installations and make connections from the nearest power supply</p> <p>PC9. attach mounting brackets at the back side of the TV in case it is to be wall mounted</p> <p>PC10. drill holes on the wall at the identified locations and insert anchors into the holes drilled</p> <p>PC11. follow instructions in the installation manual to place the TV at appropriate distance from the floor and the walls</p> <p>PC12. place on appropriate stand or platform as recommended by company, if applicable</p> <p>PC13. select appropriate location for TV set as per location guidelines given in the installation manual and customer requirements</p> <p>PC14. ensure that the position of the screen of the TV set is set according to the lighting in the room</p>

ELE/N3102

Install the television set

	<p>PC15. educate customer on importance of proper placing</p> <p>PC16. educate about switching off the unit during voltage fluctuations and use of voltage regulators, if necessary</p>
Confirming functionality of TV set installed	<p>To be competent, the user/ individual must be able to:</p> <p>PC17. plug in the power supply wire, set top box connection, etc., if applicable</p> <p>PC18. demonstrate the features and utility of the TV set and the remote control</p> <p>PC19. explain the precautions to be taken while using the television</p> <p>PC20. use the correct tools and equipment for installation</p> <p>PC21. make mechanical support and power supply connections securely</p> <p>PC22. complete installation in time target given</p> <p>PC23. educate customer on proper operation and maintenance procedures</p>
Completing documentation	<p>To be competent, the user/ individual must be able to:</p> <p>PC24. fill in customer acknowledgement form</p> <p>PC25. seek customer's signature</p> <p>PC26. complete other documentation for recording completion of installation</p> <p>PC27. call customer care and inform about job completion</p>
Interacting with superior	<p>To be competent, the user/ individual must be able to:</p> <p>PC28. understand the work requirement from superior, periodically</p> <p>PC29. report to superior on the work completed</p> <p>PC30. escalate the customer issues and problems unresolved at field level</p> <p>PC31. carry out daily field schedule as per instructions</p> <p>PC32. refer unrelated customer queries</p> <p>PC33. report work status and prepare required documentation as per company standards</p> <p>PC34. document the work completed on the company ERP software for tracking and future references</p>
Knowledge and Understanding (K)	
B. Organizational Context (Knowledge of the company / organization and its processes)	<p>The 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 individual on the job needs to know and understand:</p> <p>KB1. installation-site requirements (structural requirements)</p> <p>KB2. different types of TVs such as CRT TV, LED TV, LCD TV</p> <p>KB3. wiring and connection of set top boxes, home theatre systems to the television set</p> <p>KB4. different features and functionalities of various models</p> <p>KB5. safety precautions to be taken while installing</p> <p>KB6. manual-based procedure of installing the TV set</p> <p>KB7. packaging waste disposal procedures</p> <p>KB8. use of test equipment and tools such as multi-meter, volt -ohmmeter</p>

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Install the television set

	<p>KB9. other products of the company</p> <p>KB10. safety rules, policies and procedures</p> <p>KB11. quality standards to be followed</p>
Skills (S)	
C. Core Skills/ Generic Skills	Reading, writing and computer skills
	The user/individual on the job needs to know and understand how to:
	SA1. read job sheet for installation as registered by customer care/ company's ERP system
	SA2. document the completed work on computer and paper
	SA3. read the standard operating procedures for different types of television sets
	Teamwork and multitasking
	The user/individual on the job needs to know and understand how:
	SA4. to share work load as required
	SA5. to achieve the targets given on installation per day or month
D. Professional Skills	TV operation
	The user/individual on the job needs to know and understand how:
	SB1. to operate the TV set and use various features of different models
	SB2. to fix various accessories and parts that have accompanied the TV set
	SB3. to check features and functionalities after installation
	Using tools and machines
	The user/individual on the job needs to know and understand how:
	SB4. to operate tools such as screw drivers, spanners, pipe cutter for installation
SB5. to make appropriate settings after plugging in	
	Reflective thinking
	The user/individual on the job needs to know and understand how:
	SB6. to improve work processes
	SB7. to reduce repetition of errors in installation
	Critical thinking
	The user/individual on the job needs to know and understand how:
	SB8. to spot process disruptions and delays
	SB9. to report on any customer concerns to superiors without delay

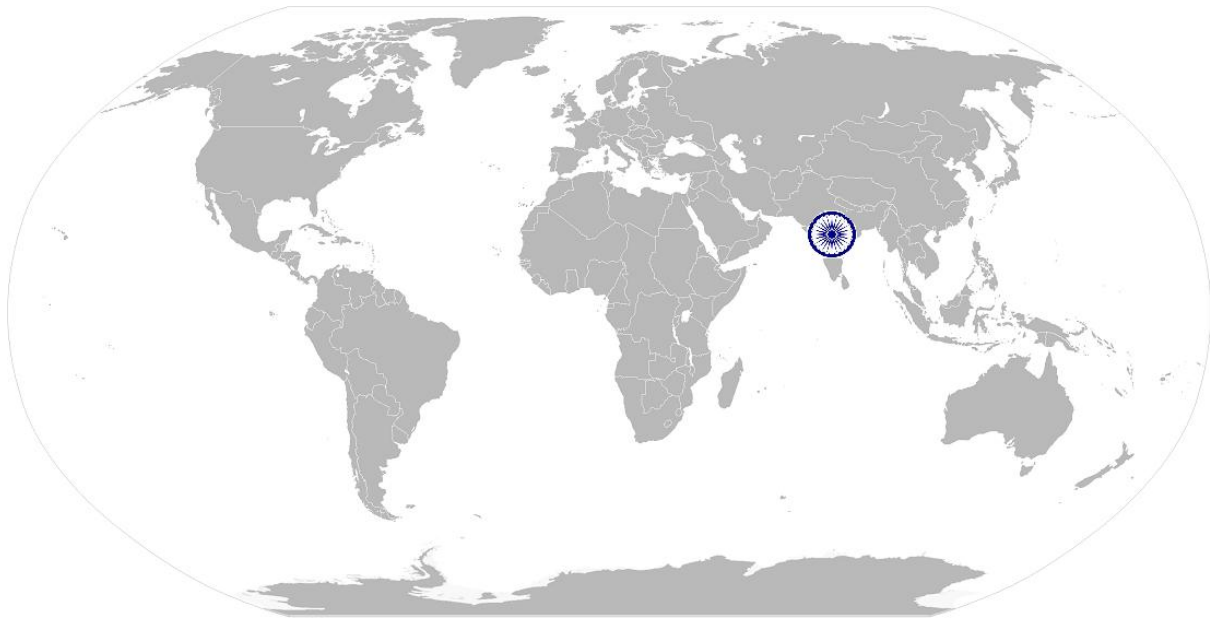
ELE/N3102

Install the television set

NOS Version Control

NOS Code	ELE/N3102		
Credits(NSQF)	TBD	Version number	1.0
Industry	Electronics	Drafted on	22/11/13
Industry Sub-sector	Consumer Electronics	Last reviewed on	24/12/13
Occupation	After Sales Service	Next review date	30/06/16

National Occupational Standard



Overview

This unit is about visiting customer's premise in order to provide support for rectifying CRT TV related faults as per the complaint recorded with customer care.

ELE/N3103

Repair dysfunctional CRT TV

National Occupational Standard

Unit Code	ELE/N3103
Unit Title (Task)	Repair dysfunctional CRT TV
Description	This OS unit is about understanding the customer's complaints, identifying the fault and fixing the CRT TV
Scope	<p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> • Understand the symptoms and identify the fault • Repair the television set • Confirm functionality of the repaired unit • Achieve productivity and quality target as per company's norms
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Understanding symptoms and identifying fault	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. diagnose the fault in the unit as per customer interaction and initial inspection</p> <p>PC2. check the plug point to which the TV set is connected and ensure that the power supply module in the TV set is receiving power</p> <p>PC3. carry out basic earthing test and volt ampere test and ensure that the fault is internal before disassembling the unit</p> <p>PC4. discharge any large capacitor and the charge stored in the cathode ray tube before diagnosis</p> <p>PC5. use the voltmeter to check the fuse ensure that the capacitor has not blown off</p> <p>PC6. follow the path of current to identify in which section the defect has occurred before troubleshooting a circuit</p> <p>PC7. send to factory for in depth diagnosis, if problem cannot be identified at site</p> <p>PC8. interpret instructions manual accurately to correlate the symptoms indicated with exact problem</p>
Repairing the CRT TV	<p>To be competent, the user/ individual must be able to:</p> <p>PC9. if the fault identified is due to a problem in an immediately replaceable part such as fuse, replace at the customer's premise</p> <p>PC10. if the dysfunctional module/part is specialised such as problem with the picture tube and cannot be replaced immediately, remove and replace during second visit with a functional one as collected from the service centre</p> <p>PC11. if the fault identified requires the TV set to be transported to the service centre, make necessary arrangements for them after taking customer's approval</p> <p>PC12. optimise the time taken to fix the dysfunctional television set</p> <p>PC13. select the right spares as per recorded complaints at Customer Care</p>
Confirming functionality of repaired set	<p>To be competent, the user/ individual must be able to:</p> <p>PC14. reassemble the unit</p> <p>PC15. switch on power supply and confirm that the unit is functioning as per specifications</p>

ELE/N3103

Repair dysfunctional CRT TV

	<p>PC16. demonstrate and confirm functionality of the unit with the customer PC17. collect necessary payments from the customer PC18. fill in customer acknowledgement form PC19. complete other documentation procedures to record complaint closure</p>
<p>Achieving productivity and quality target</p>	<p>To be competent, the user/ individual must be able to: PC20. ensure damage free handling of the unit PC21. complete the work without any hazards PC22. diagnose the problem accurately and in short time PC23. identify the exact module in the TV set that is dysfunctional PC24. rectify 100% and avoid repeat fault in the TV set PC25. secure repairs completion receipt from customer PC26. meet daily target for attending to number of complaints PC27. achieve 100% customer satisfaction PC28. record zero customer complaints post service PC29. recover payments as per rate sheet/ communication from customer care PC30. sell related products such as new equipment or Annual Maintenance Contracts (AMC)</p>
<p>Knowledge and Understanding (K)</p>	
<p>C. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The individual on the job needs to understand: KA1. company's policies on: incentives, delivery standards and personnel management and customer service standards KA2. reporting and documentation processes KA3. importance of the individual's role in the system KA4. reporting structure</p>
<p>B. Technical Knowledge</p>	<p>The individual on the job needs to know and understand: KB1. functioning of various sub systems of CRT television set and basic television technology KB2. components and sub units found in the power supply unit (SMPS) KB3. controls and features of different television models of the company KB4. faults common to all types of television models and faults specific to different models KB5. fundamentals of electricity such as Ohms law, difference between AC and DC, calculation of energy consumption of the appliance, domestic wiring, series and parallel connections KB6. television receiver fundamentals and CRT basics KB7. troubleshooting of colour problems, vertical circuit, audio circuit, tuner circuit, micro processor, remote control and other frequently occurring problems of TV KB8. basic electronics of components such as diode, transformer, LED, photo transistor, capacitor, resistor, inductor, thermister KB9. hazards, their causes and prevention/personal safety KB10. frequently occurring faults such as no picture, no sound, colour problems etc., their causes and solutions KB11. components/modules of the CRT TV and their prices</p>

ELE/N3103

Repair dysfunctional CRT TV

	KB12. other products of the company
Skills (S)	
E. Core Skills/ Generic Skills	Reading, writing and computer skills
	The individual on the job needs to know and understand how to: SA1. read warnings, instructions and other text material on product labels, and components SA2. read job sheet and complaints SA3. read product operating manuals SA4. operate computers and software installed
	Documentation skills
	The individual on the job needs to know and understand how to: SA5. document completion note for customer SA6. record completion information in the ERP system
F. Professional Skills	Using tools and machines
	The individual on the job needs to know and understand how to: SB1. operate/use volt/ohm meter, multi meter, pliers, screwdrivers, wrenches SB2. use tools such as screw drivers, pliers, cutters, safely
	Fault diagnosing skills
	The individual on the job needs to know and understand how to: SB3. detect basic electrical faults such as improper earthing, defective power cord, connector or internal wiring defect, short/ loose/open contacts, blown fuse, defective transformer SB4. identify problems due to improper TV adjustments such as user picture adjustment, focus adjustment, colour balance adjustment, geometry adjustment, CRT purity/ convergence adjustment etc SB5. detect problems in low voltage power supply due to symptoms such as dead set (totally or intermittent), blown fuse, no picture/sound, TV turning off after warming up etc. SB6. identify deflection problems indicated through symptoms such as TV non linearity, intermittent jumping/jittering of picture, horizontal output transistors keep blowing, horizontal/vertical flipped picture SB7. detect problems in high voltage power supply due to symptoms such as arcing, sparking or corona from CRT HV anode, snaps/crackles, arcing from fly back or vicinity, flashovers inside the CRT SB8. identify other faults such as Colour and video problems, tuner problems, audio problems, etc.
	Communication skills
The individual on the job needs to know and understand: SB9. how to interact with customer to understand the problem faced SB10. how to market and sell accessories and products of the company SB11. importance of communicating in language	

ELE/N3103

Repair dysfunctional CRT TV

	SB12. importance of behavioural precautions and etiquette while dealing with customer
	SB13. how to be polite, patient and punctual
	Critical thinking
	<p>The individual on the job needs to know and understand:</p> <p>SB14. how to match symptoms of the fault noticed to the cause of the problem</p> <p>SB15. anticipate and avoid hazards that may occur during repairs because of tools, materials used or repair processes</p>

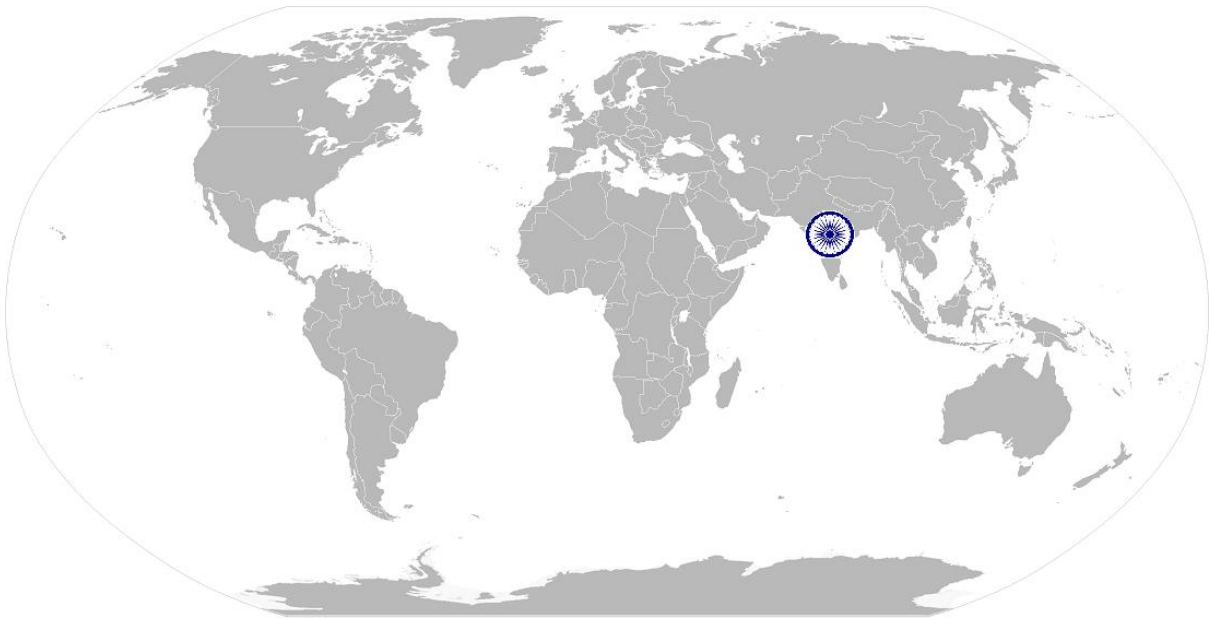
ELE/N3103

Repair dysfunctional CRT TV

NOS Version Control

NOS Code	ELE/N3103		
Credits(NSQF)	TBD	Version number	1.0
Industry	Electronics	Drafted on	22/11/13
Industry Sub-sector	Consumer Electronics	Last reviewed on	24/12/13
Occupation	After Sales Service	Next review date	30/06/16

National Occupational Standard



Overview

This unit is about visiting customer's premises in order to provide support for rectifying LED/LCD TV related faults as per the complaint recorded with customer care.

ELE/N3104

Repair dysfunctional FPD TV

Unit Code	ELE/N3104
Unit Title (Task)	Repair dysfunctional FPD TV
Description	This OS unit is about understanding the customer's complaints, identifying the fault and fixing the LED/LCD TV
Scope	<p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> • Understand the symptoms and identify the fault • Repair the LED/LCD TV • Confirm functionality of the repaired unit • Achieve productivity and quality target as per company standards
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Understanding symptoms and identifying fault	<p>To be competent, the user/ individual must be able to:</p> <p>PC1. diagnose the fault in the unit as per customer interaction and initial inspection</p> <p>PC2. carry out basic tests such as power supply inspection, volt ampere test and continuity test</p> <p>PC3. unplug the power supply and any other equipment connected to the TV, e.g., set top box, DVD player, computer, home theatre</p> <p>PC4. remove the LED/LCD TV set from where it has been installed on the wall</p> <p>PC5. remove the screws attached to the mounts on the TV and separate the mounts from the TV set</p> <p>PC6. remove all the screws holding the rear cover and separate the rear cover from the rest of the system</p> <p>PC7. locate the exact location of the fault by examining various modules of the TV such as the power supply board, the main board, speakers, etc.</p> <p>PC8. send to factory for in depth diagnosis, if problem cannot be identified at site</p> <p>PC9. diagnose the problem accurately and in short time</p> <p>PC10. inspect all electrical and electronic parts of the unit as per instructions in the repair manual</p>
Repairing the LCD/LED TV	<p>To be competent, the user/ individual must be able to:</p> <p>PC11. if the fault identified is due to a problem in one of the PCBs within the TV set, remove the PCB and replace it with a functional one</p> <p>PC12. if the dysfunctional module/part is specialised and cannot be replaced immediately, remove and replace during second visit with a functional one as collected from the service centre</p> <p>PC13. if the problem identified requires the set to be transported to the service centre, educate the customer about it and make necessary arrangements for the same</p> <p>PC14. optimise the time taken to fix the dysfunctional television set</p> <p>PC15. select the right spares as per recorded complaints at the customer care</p>

ELE/N3104

Repair dysfunctional FPD TV

<p>Confirming functionality of repaired unit</p>	<p>To be competent, the user/ individual must be able to:</p> <p>PC16. re assemble and re install the unit</p> <p>PC17. switch on power supply and confirm that the unit is functioning as per specifications</p> <p>PC18. demonstrate and confirm functionality of the unit with the customer</p> <p>PC19. collect necessary payments from the customer</p> <p>PC20. fill in customer acknowledgement form</p> <p>PC21. complete other documentation procedures to record complaint closure</p>
<p>Achieving productivity and quality target</p>	<p>To be competent, the user/ individual must be able to:</p> <p>PC22. rectify to avoid repeat fault in the TV</p> <p>PC23. meet daily target for attending to number of complaints</p> <p>PC24. achieve 100% customer satisfaction</p> <p>PC25. record minimum customer complaints post service</p> <p>PC26. educate customer on correct practices to follow in order to avoid further problems</p> <p>PC27. ensure damage free handling of the unit</p> <p>PC28. recover payments as per rate sheet/ communication from customer care</p> <p>PC29. sell related products or Annual Maintenance Contracts</p>
<p>Knowledge and Understanding (K)</p>	
<p>D. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The individual on the job needs to 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. television manufacturing capabilities of the organisation</p> <p>KA4. importance of the individual's role in the system</p> <p>KA5. reporting structure</p>
<p>B. Technical Knowledge</p>	<p>The individual on the job needs to know and understand:</p> <p>KB1. block diagram of the television set and functioning of the various sub units</p> <p>KB2. controls and features of different television models of the company</p> <p>KB3. faults common to all types of television sets and faults specific to different models</p> <p>KB4. basic electronics of components such as diode, transformer, LED, photo transistor, capacitor, resistor, inductor, thermister</p> <p>KB5. fundamentals of electricity such as ohms law, difference between ac and dc, calculation of energy consumption of the appliance, understanding of domestic wiring, understanding of series and parallel connections</p> <p>KB6. electrical and electronic symbols, multiples and SI units</p> <p>KB7. troubleshooting knowledge with respect to LCD/LED TV</p> <p>KB8. hazards, their causes and prevention/personal safety</p> <p>KB9. frequently occurring faults such as picture not clear, low/no sound etc.</p> <p>KB10. features of components/modules of the TV set and their corresponding prices</p> <p>KB11. other products of the company</p>

ELE/N3104

Repair dysfunctional FPD TV

Skills (S)	
G. Core Skills/ Generic Skills	Reading, writing and computer skills
	The individual on the job needs to know and understand how to: SA1. read warnings, instructions and other text material on product labels, and components SA2. read job sheet and complaints SA3. read product operating manuals SA4. operate computers and software installed
	Documentation skills
	The individual on the job needs to know and understand: SA5. how to document completion note for customer SA6. how to record completion information in the ERP system
H. Professional Skills	Using tools and machines
	The individual on the job needs to know and understand how to: SB1. operate/use volt/ohm meter, multi meter, pliers, screwdrivers, wrenches
	Communication skills
	The individual on the job needs to know and understand: SB2. how to interact with customer to understand the problem faced SB3. how to market and sell accessories and products of the company SB4. how to interact with repair centre or vendor to replace or repair faulty part SB5. importance of communicating in local language SB6. importance of behavioural precautions and etiquette while dealing with customer SB7. how to be polite, patient and punctual
	Critical thinking
	The individual on the job needs to know and understand how to: SB8. match symptoms of the fault noticed to the cause of the problem SB9. anticipate and avoid hazards that may occur during repairs because of tools, materials used or repair processes

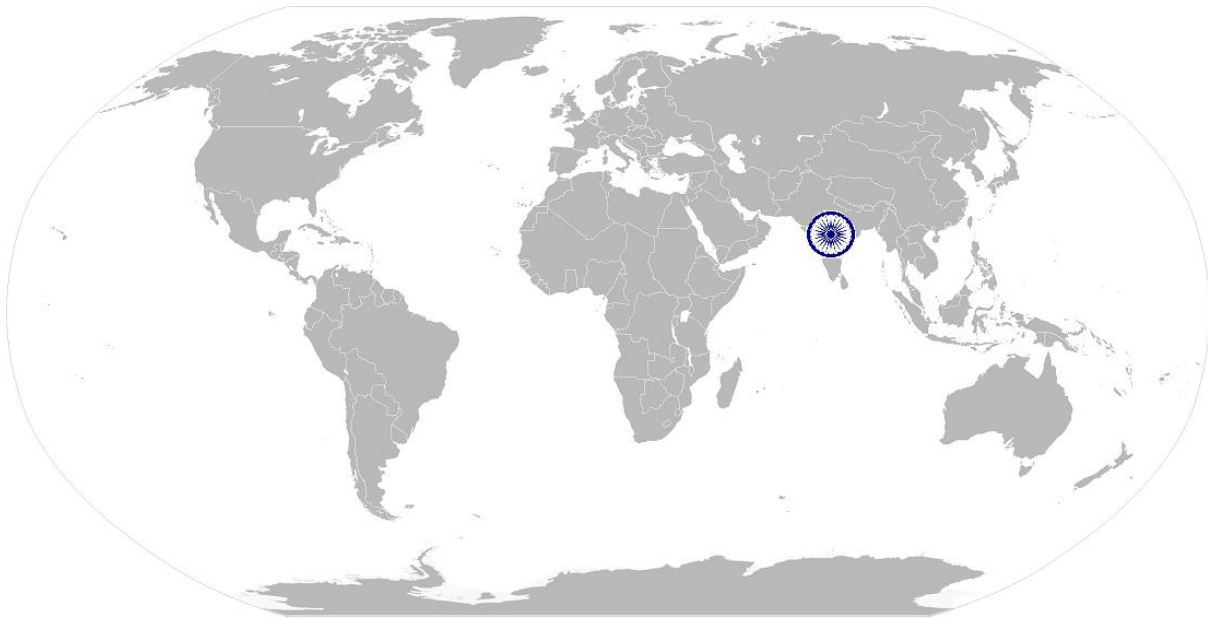
ELE/N3104

Repair dysfunctional FPD TV

NOS Version Control

NOS Code	ELE/N3104		
Credits(NSQF)	TBD	Version number	1.0
Industry	Electronics	Drafted on	22/11/13
Industry Sub-sector	Consumer Electronics	Last reviewed on	24/12/13
Occupation	After Sales Service	Next review date	30/06/16

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
Interacting with supervisor	<p>To be competent, the user/ individual 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>
Interacting with colleagues	<p>To be competent, the user/ individual 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 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 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	Teamwork and multitasking
	The individual on the job needs to know and understand how: SA1. to deliver product to next work process on time
B. Professional Skills	Decision making
	The individual on the job needs to know and understand: SB1. how to report potential areas of disruptions to work process SB2. when to report to supervisor and when to deal with a colleague depending on the type of concern
	Reflective thinking
	The individual on the job needs to know and understand: SB3. how to improve work process
	Critical thinking
	The individual on the job needs to know and understand: SB4. how to spot process disruptions and delays

Interact with colleagues

NOS Version Control

NOS Code	ELE/N9901		
Credits(NSQF)	TBD	Version number	1.0
Industry	Electronics	Drafted on	07/11/13
Industry Sub-sector	Consumer Electronics	Last reviewed on	24/12/13
Occupation	After Sales Service	Next review date	30/06/16

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 (OS)	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.

Qualifications Pack For TV Repair Technician

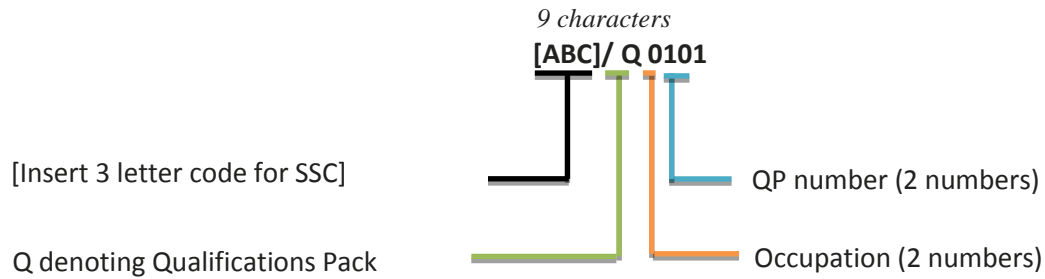
Core Skills/ Generic Skills	Core skills or generic skills are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these 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 Qualifications Framework
NVEQF	National Vocational Education Qualifications Framework
QP	Qualifications Pack
CRT	Cathode Ray Tube

Acronyms

Annexure

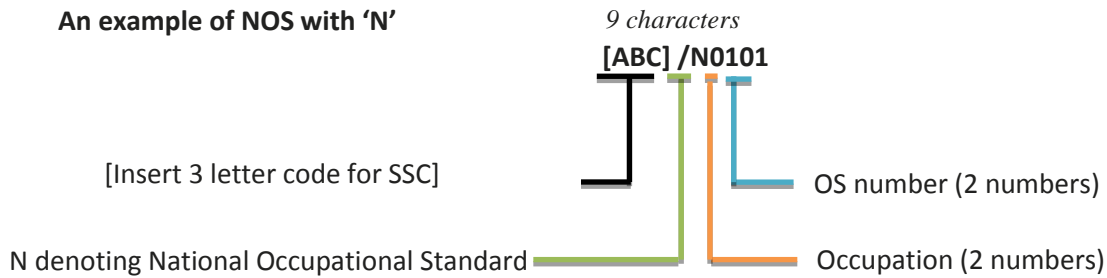
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



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
Generic Occupation	96 - 99

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

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role	TV Repair Technician
QP #	ELE/Q3101
Sector Skill Council	Electronics Sector Skills 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.

Element	Performance Criteria	Total Marks (500)	Out Of	Marks Allocation	
				Theory	Skills Practical
ELE/N3101 Engage with customer for service					
Interacting with customer prior to visit	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		3	1	2
	PC3. greet the customer and confirm the problem registered		3	1	2
	PC4. be polite and patient when interacting with customer		3	1	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		3	1	2
	PC7. ascertain customer location in order to make the route plan for the day		3	1	2
Interacting with customer at their premises	PC8. enquire about the symptoms and history of problems in the appliance		4	2	2
	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
Suggesting possible solutions to customer	PC13. discuss the problem(s) identified with customer		5	2	3
	PC14. suggest possible solutions and costs involved		5	2	3
	PC15. explain the time required and methodology for servicing necessary		5	2	3
	PC16. seek customer's approval on further action		5	2	3
Achieving productivity and quality	PC17. accurately assess the problem and solution(s) necessary		5	2	3
	PC18. offer most appropriate and cost-effective service as per customer's requirement		5	2	3
	PC19. communicate problem effectively in order to secure customer's confidence		5	2	3
	PC20. ensure customer satisfaction and positive feedback		5	2	3
	PC21. record minimum customer complaints post service		5	2	3

	PC22. avoid repeat problem post service		5	2	3
	PC23. prepare most optimum route plan to complete daily target visits		5	3	2
			100	40	60
ELE/N3102 Install the television set					
Removing packaging and placing	PC1. remove the television set packaging in which it was shipped to customer without damage to TV set and accessories	100	3	1	2
	PC2. check that the product matches the customer order in terms of model and make		3	1	2
	PC3. check that all supporting accessories purchased are there in the pack		3	1	2
	PC4. check tools and fitments required for the installation are available		3	1	2
	PC5. clear up the packaging material waste and dispose as per company's norms		3	1	2
Fixing TV set's location	PC6. seek customer's input on placement of television set		2	1	1
	PC7. take necessary measurements from the floor and the sides of the wall for drilling holes (if applicable)		2	1	1
	PC8. make necessary wire concealing installations and make connections from the nearest power supply		3	1	2
	PC9. attach mounting brackets at the back side of the TV in case it is to be wall mounted		2	1	1
	PC10. drill holes on the wall at the identified locations and insert anchors into the holes drilled		3	1	2
	PC11. follow instructions in the installation manual to place the TV at appropriate distance from the floor and the walls		3	1	2
	PC12. place on appropriate stand or platform as recommended by company, if applicable		2	1	1
	PC13. select appropriate location for TV set as per location guidelines given in the installation manual and customer requirements		2	1	1
Confirming functionality of TV set installed	PC14. ensure that the position of the screen of the TV set is set according to the lighting in the room		2	1	1
	PC15. educate customer on importance of proper placing		2	1	1
	PC16. educate about switching off the unit during voltage fluctuations and use of voltage regulators, if necessary		2	1	1
	PC17. plug in the power supply wire, set top box connection, etc., if applicable		3	1	2
	PC18. demonstrate the features and utility of the TV set and the remote control	4	2	2	
	PC19. explain the precautions to be taken while using the television	4	2	2	
	PC20. use the correct tools and equipment for installation	4	2	2	
Completing documentation	PC21. make mechanical support and power supply connections securely	4	2	2	
	PC22. complete installation in time target given	4	2	2	
	PC23. educate customer on proper operation and maintenance procedures	4	2	2	
	PC24. fill in customer acknowledgement form	3	1	2	
Interacting with superior	PC25. seek customer's signature	3	1	2	
	PC26. complete other documentation for recording completion of installation	3	1	2	
	PC27. call customer care and inform about job completion	3	1	2	
	PC28. understand the work requirement from superior, periodically	3	1	2	
	PC29. report to superior on the work completed	3	1	2	
	PC30. escalate the customer issues and problems unresolved at field level	3	1	2	
	PC31. carry out daily field schedule as per instructions	3	1	2	

	PC32. refer unrelated customer queries		3	1	2
	PC33. report work status and prepare required documentation as per company standards		3	1	2
	PC34. document the work completed on the company ERP software for tracking and future references		3	1	2
		TOTAL	100	40	60
ELE/N3103 Repair dysfunctional CRT TV					
Understanding symptoms and identifying fault	PC1. diagnose the fault in the unit as per customer interaction and initial inspection	100	3	1	2
	PC2. check the plug point to which the TV set is connected and ensure that the power supply module in the TV set is receiving power		4	2	2
	PC3. carry out basic earthing test and volt ampere test and ensure that the fault is internal before disassembling the unit		4	2	2
	PC4. discharge any large capacitor and the charge stored in the cathode ray tube before diagnosis		4	1	3
	PC5. use the voltmeter to check the fuse ensure that the capacitor has not blown off		4	1	3
	PC6. follow the path of current to identify in which section the defect has occurred before troubleshooting a circuit		4	1	3
	PC7. send to factory for in depth diagnosis, if problem cannot be identified at site		3	1	2
	PC8. interpret instructions manual accurately to correlate the symptoms indicated with exact problem		3	1	2
Repairing the CRT TV	PC9. if the fault identified is due to a problem in an immediately replaceable part such as fuse, replace at the customer's premise	100	5	2	3
	PC10. if the dysfunctional module/part is specialised such as problem with the picture tube and cannot be replaced immediately, remove and replace during second visit with a functional one as collected from the service centre		5	2	3
	PC11. if the fault identified requires the TV set to be transported to the service centre, make necessary arrangements for them after taking customer's approval		5	2	3
	PC12. optimise the time taken to fix the dysfunctional television set		5	2	3
	PC13. select the right spares as per recorded complaints at Customer Care		5	2	3
Confirming functionality of repaired set	PC14. reassemble the unit	100	4	1	3
	PC15. switch on power supply and confirm that the unit is functioning as per specifications		4	1	3
	PC16. demonstrate and confirm functionality of the unit with the customer		4	1	3
	PC17. collect necessary payments from the customer		4	2	2
	PC18. fill in customer acknowledgement form		4	2	2
	PC19. complete other documentation procedures to record complaint closure		4	2	2
Achieving productivity and quality target	PC20. ensure damage free handling of the unit	100	2	1	1
	PC21. complete the work without any hazards		2	1	1
	PC22. diagnose the problem accurately and in short time		2	1	1
	PC23. identify the exact module in the TV set that is dysfunctional		2	1	1
	PC24. rectify 100% and avoid repeat fault in the TV set		2	1	1
	PC25. secure repairs completion receipt from customer		2	1	1
	PC26. meet daily target for attending to number of complaints		2	1	1
	PC27. achieve 100% customer satisfaction		2	1	1

Qualifications Pack For TV Repair Technician

	PC28. record zero customer complaints post service		2	1	1
	PC29. recover payments as per rate sheet/ communication from customer care		2	1	1
	PC30. sell related products such as new equipment or Annual Maintenance Contracts (AMC)		2	1	1
	TOTAL		100	40	60
ELE/N3104 Repair dysfunctional FPD TV					
Understanding symptoms and identifying fault	PC1. diagnose the fault in the unit as per customer interaction and initial inspection	100	3	1	2
	PC2. carry out basic tests such as power supply inspection, volt ampere test and continuity test		3	1	2
	PC3. unplug the power supply and any other equipment connected to the TV, e.g., set top box, DVD player, computer, home theatre		3	1	2
	PC4. remove the LED/LCD TV set from where it has been installed on the wall		3	1	2
	PC5. remove the screws attached to the mounts on the TV and separate the mounts from the TV set		3	1	2
	PC6. remove all the screws holding the rear cover and separate the rear cover from the rest of the system		3	1	2
	PC7. locate the exact location of the fault by examining various modules of the TV such as the power supply board, the main board, speakers, etc.		3	1	2
	PC8. send to factory for in depth diagnosis, if problem cannot be identified at site		3	1	2
	PC9. diagnose the problem accurately and in short time		3	1	2
	PC10. inspect all electrical and electronic parts of the unit as per instructions in the repair manual		5	2	3
Repairing the LCD/LED TV	PC11. if the fault identified is due to a problem in one of the PCBs within the TV set, remove the PCB and replace it with a functional one	5	2	3	
	PC12. if the dysfunctional module/part is specialised and cannot be replaced immediately, remove and replace during second visit with a functional one as collected from the service centre	5	2	3	
	PC13. if the problem identified requires the set to be transported to the service centre, educate the customer about it and make necessary arrangements for the same	5	2	3	
	PC14. optimise the time taken to fix the dysfunctional television set	5	2	3	
	PC15. select the right spares as per recorded complaints at the customer care National Occupational	5	2	3	
Confirming functionality of repaired unit	PC16. re assemble and re install the unit	4	1	3	
	PC17. switch on power supply and confirm that the unit is functioning as per specifications	3	1	2	
	PC18. demonstrate and confirm functionality of the unit with the customer	3	1	2	
	PC19. collect necessary payments from the customer	3	1	2	
	PC20. fill in customer acknowledgement form	3	1	2	
	PC21. complete other documentation procedures to record complaint closure	3	1	2	
Achieving productivity and quality target	PC22. rectify to avoid repeat fault in the TV	3	1	2	
	PC23. meet daily target for attending to number of complaints	3	1	2	
	PC24. achieve 100% customer satisfaction	3	1	2	
	PC25. record minimum customer complaints post service	3	1	2	
	PC26. educate customer on correct practices to follow in order to avoid further problems	3	1	2	
	PC27. ensure damage free handling of the unit	3	1	2	
	PC28. recover payments as per rate sheet/ communication from customer care	3	1	2	
	PC29. sell related products or Annual Maintenance Contracts	3	1	2	

		TOTAL	100	35	65
ELE/N0001 Interact with colleagues					
Interacting with supervisor	PC1. understand work requirements, targets and incentives	100	5	2	3
	PC2. learn about new product models, their features and functions		6	3	3
	PC3. report problems identified in the field		6	3	3
	PC4. escalate customer concerns that cannot be handled on field		6	2	4
	PC5. resolve personnel issues		6	2	4
	PC6. receive feedback on work standards and customer satisfaction		6	2	4
	PC7. communicate any potential hazards at a particular location		6	2	4
	PC8. meet given targets		6	2	4
	PC9. deliver work of expected quality despite constraints		6	2	4
	PC10. Have feedback from a happy and satisfied customer		5	2	3
Interacting with colleagues	PC11. resolve inter-personnel conflicts and achieve smooth workflow	7	3	4	
	PC12. receive spares from tool room or stores	7	3	4	
	PC13. deposit faulty modules and tools to stores	7	3	4	
	PC14. pass on customer complaints to colleagues in a respective geographical area	7	3	4	
	PC15. assist colleagues with resolving field problems	7	3	4	
	PC16. clearly demarcate roles of each team member	7	3	4	
TOTAL			100	40	60

