

Model Curriculum

1. TV REPAIR TECHNICIAN

SECTOR: ELECTRONICS
SUB-SECTOR: CONSUMER ELECTRONICS
OCCUPATION: AFTER SALES SERVICE
REF ID: ELE/Q3101 VERSION 1.0
NSQF LEVEL: 4



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

ELECTRONICS SECTOR SKILLS COUNCIL OF INDIA

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/Qualification Pack: '**TV Repair Technician**'
QP No. '**ELE/Q3101 NSQF Level 4**'

Date of Issuance: **December, 2015**

Valid up to: **March, 2016**

* Valid up to the next review date of the Qualification Pack



Authorised Signatory
(Electronics Sector Skills Council of India)

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TV REPAIR TECHNICIAN

CURRICULUM / SYLLABUS

This course encompasses 5 out of 5 National Occupational Standards (NOS) of “TV Repair Technician” Qualification Pack issued by “Electronic Sector Skill Council”.

Program Name	TV Repair Technician		
Qualification Pack Name & Reference ID. ID	ELE/Q3101 VERSION 1.0		
Version No.	1.0	Version Update Date	
Pre-requisites to Training	8th Standard passed		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Interact with the customer in order to identify and understand the problem in the television set • Ensure customer satisfaction • Install and Repair dysfunctional CRT and FPD television • Identify dysfunctional components through visual inspection and by use of multi-meter • Read and Comprehend signs, labels and warning • Communicate effectively • Follow behaviour etiquettes while interacting with others • Establishing good working relationships with colleagues within and outside the department by coordinating 		

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Basic of Electronics</p> <p>Theory Duration (hh:mm) 20:00</p> <p>Practical Duration (hh:mm) 20:00</p> <p>Corresponding NOS Code ELE/N3102</p>	<ul style="list-style-type: none"> • Familiarity with basic electrical and digital electronics • Explain the function of various electronic components such as transistor, resistor, capacitor, inductor, tuner, transformer etc • Fundamental of electricity • Basic electronics and circuit knowledge specially with respect to Television set • Knowledge of domestic wiring and different series & parallel connection • Operate multi-meter, soldering iron, cathode ray oscilloscope 	<ul style="list-style-type: none"> • Components like – Picture Tube, Transistor, Resistor, Capacitor, Inductor, Tuner, Transformer • Multi-meter • Soldering iron • CRO
2	<p>Install the TV set</p> <p>Theory Duration (hh:mm) 40:00</p> <p>Practical Duration (hh:mm) 40:00</p> <p>Corresponding NOS Code ELE/N3102</p>	<ul style="list-style-type: none"> • Different section of a TV and their functioning • Familiarity with different types and designs of colour television • Remove packaging and check accessories • Select tools and equipment for installation • Fix the TV set at appropriate location • Check and ensure TV set's functioning • Different types of TVs such as CRT TV, LED TV, LCD TV • Concealed wiring and make connection of power supply, set top boxes, home theatre systems to the TV set • Fundamental of electrical and electronic symbols and SI units • Explain different features and functionalities of various models • Use of test equipment and tools such as multi-meter, volt -ohmmeter 	<ul style="list-style-type: none"> • Television sets with remote • Screw Drivers • Spanners • Pipe Cutter • Drill Machine • Multi-meter • Circuit Tester • Scissors • Pliers • Pencil • Wire running tools — fish/carpet tape, flex rods, electrical tape • Wall probe — piano wire, etc • Wall Mount Kit • Manual Guide • Antenna • STB • Measuring Tape • Hammer • Crimping Tools • Cutter/ knife
3	<p>Repair dysfunctional CRT TV set</p> <p>Theory Duration (hh:mm) 40:00</p> <p>Practical Duration (hh:mm) 40:00</p> <p>Corresponding NOS Code ELE/N3103</p>	<ul style="list-style-type: none"> • Basic fundamental of CRT television set • Different section of a TV and their functioning • Understanding of colours, colour picture & signals and colour picture tube • Explain the function of picture tube • Skill in repair of B&W and color television set • Repair the CRT television set • Carry out basic earthing test and volt ampere test • Ensure that the fault is internal 	<ul style="list-style-type: none"> • CRT Television of different makes with User Manual • Digital Multi-meter • Digital IC tester with manual/Batch • Trainer Kit • CRO • Soldering Tool Kit • SMD Soldering Tools • Lamp load • Components like – Picture Tube, Transistor, Resistor, Capacitor, Inductor, Tuner, Transformer • Power Supply

		<p>before disassembling the unit</p> <ul style="list-style-type: none"> • Understand the symptoms and identify the fault • Reassemble the Television set and test its functioning • Operate measuring tools and equipments used to repair CRT TV set • Basic troubleshooting knowledge with respect to CRT TV set 	<ul style="list-style-type: none"> • Magnifying Glass • PPE like antistatic wrist band and mat etc • Magnetic Screw Driver Set • Drilling Machine • Pliers • Digital IC data book • Various Model Circuit Diagram • Technicians tool kit • Infra-Red remote control tester
4	<p>Repair dysfunctional Flat Panel Display (FPD)TV set</p> <p>Theory Duration (hh:mm) 40:00</p> <p>Practical Duration (hh:mm) 40:00</p> <p>Corresponding NOS Code ELE/N3104</p>	<ul style="list-style-type: none"> • Basic fundamental of LCD/ LED television set • Inspect all electrical and electronic parts of the unit • Skill in repair of colour television • Identify the reason for fault on the LED/ LCD TV set and fix it. • Ensure that the fault is internal before disassembling the unit • Reassemble and Reinstall the Television set and test its functioning • Operate measuring tools and equipments used to repair FPD TV set • Basic troubleshooting knowledge with respect to LED/ LCD TV set 	<ul style="list-style-type: none"> • Flat Panel Television of different makes with User Manual • Digital Multi-meter • Digital IC tester with manual/Batch • Trainer Kit • CRO • Soldering Tool Kit • SMD Soldering Tools • Components like – Diode, Transistor, Resistor, Capacitor, Inductor, Tuner, Transformer • Power Supply • Magnifying Glass • PPE like antistatic wrist band and mat etc • Magnetic Screw Driver Set • Drilling Machine • Pliers • Digital IC data book • Various Model Circuit Diagram • Technicians tool kit • Infra-Red remote control tester
5	<p>Engage with customer for Service</p> <p>Theory Duration (hh:mm) 20:00</p> <p>Practical Duration (hh:mm) 20:00</p> <p>Corresponding NOS Code ELE/N3101</p>	<ul style="list-style-type: none"> • Basic electrical and mechanical modules of various products. • Electronics involved in the type of product. • Models of different appliances and their common and distinguishing features. • Understand how to communicate with customers. • Etiquette to be followed at customer's premises. • Precautions to be taken while handling field calls and dealing with customers. • Communicate in local language. • Importance of personal grooming. 	<ul style="list-style-type: none"> • Furniture (working tables, stools etc.) • Fire Extinguishers • First Aid Box • WHITE/ Black Board • Marker • Duster • Audio Visual Aids • Projector • E-Learning Materials - Motivational Videos • Computer with Essential Accessories and Software

<p>6</p>	<p>Interact with colleagues</p> <p>Theory Duration (hh:mm) 20:00</p> <p>Practical Duration (hh:mm) 20:00</p> <p>Corresponding NOS Code ELE/N9901</p>	<ul style="list-style-type: none"> • Understand work requirements. • Report problems identified in the field. • Deliver work of expected quality. • Have feedback from a happy and satisfied customer. • Resolve inter-personnel conflicts and achieve smooth workflow. • Communicate effectively • Understand building of team coordination. 	<ul style="list-style-type: none"> • Furniture (working tables, stools etc.); • Fire Extinguishers • First Aid Box • WHITE/ Black Board • Marker • Duster • Audio Visual Aids • Projector • E-Learning Materials - Motivational Videos • Computer with Essential Accessories and Software
	<p>Total Duration</p> <p>Theory Duration 180:00</p> <p>Practical Duration 180:00</p>	<p>Unique Equipment Required:</p> <p>Desoldering Pump Digital Multimeter DTH With Dish Antenna ESD Gloves Esd-Safe Twizzer IC Chip Extractor Insulation Tape Lead Solder Line Tester Magnifying Lens Nose Pliers Power Supply Precision Screw Driver Screw Driver Set Shear Cutters Soldering Flux Soldering Iron Torque Screwdriver Set CRT TV LCD TV LED TV Universal Crimp Tool Wire Stripper</p>	

Grand Total Course Duration: **360 Hours 00 Minutes**

(This syllabus/ curriculum has been approved [Electronics Sector Skills Council of India](#))

Trainer Prerequisites for Job role: “TV Repair Technician” mapped to Qualification Pack: “ELE/ Q 3101 Version1.0”

Sr. No.	Area	Details
1	Job Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “ <u>ELE/ Q 3101 version1.0</u> ”.
2	Personal Attributes	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	Minimum Educational Qualifications	ITI (Electronics) or Diploma(Electronics) or B.Sc. (Electronics) or BE (Electronics)
4a	Domain Certification	Certified for Job Role: “TV Repair Technician” mapped to QP: “ELE/ Q 3101 version1.0”. Minimum accepted score =70%
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/1402”. Minimum accepted score =70%
5	Experience	<ol style="list-style-type: none"> 1. Minimum 1year (6 Months for ITI holder) experience as TV Repair Technician 2. Minimum 1 year experience as a trainer with hands on television repairing.

Annexure: Assessment Criteria

Assessment Criteria for TV Repair Technician	
Job Role	TV Repair Technician
Qualification Pack	ELE/ Q3101 version1.0
Sector Skill Council	Electronic

Sr. No.	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 centre(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 60% in aggregate and 40% in each NOS
6	The marks are allocated PC wise; however, every NOS will carry a weight age in the total marks allocated to the specific QP

Assessable Outcome	Assessment Criteria	Total Mark (600)	Out Of	Marks Allocation	
				Theory	Skills Practical
1. 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		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
	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
	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
	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
		TOTAL	100	40	60
2. ELE/N3102 Install the television set	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
	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		2	1	1

	recommended by company, if applicable				
	PC13. select appropriate location for TV set as per location guidelines given in the installation manual and customer requirements	2	1	1	
	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	
	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	
	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	
3. ELE/N3103 Repair dysfunctional CRT TV	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
PC9. if the fault identified is due to a problem in an immediately replaceable part such as fuse, replace at the customer's premise	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
PC14. reassemble the unit	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
PC20. ensure damage free handling of the unit	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

	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
4. ELE/N3104 Repair dysfunctional FPD TV	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
	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
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
	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
5. 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		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
	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