

JOB SPECIFICATION

JOB TITLE : Radio Technician (Broadcasting Receivers) (L - 2)

SECTOR : Electronics

SUB - SECTOR : Broadcasting Radio Receiver Service & Repair

The National Skill Standards and test was developed by:

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APPROVED BY THE TRIPARTITE NATIONAL SKILL TESTING BOARD.
1989.

JOB SPECIFICATION	
1	<p>JOB TITLE: Radio Technician (Broadcasting Receivers)</p> <p>LEVEL : 2</p>
2	<p>JOB DESCRIPTION:</p> <p>Repairs ordinary transistorised single and multiband radio broadcasting receivers.</p>
3	<p>LIST OF TASK:</p> <ol style="list-style-type: none"> 1. Obtaining fault symptoms from the customers. 2. Dismantling the set. 3. Detecting and replacing the faulty section and components. 4. Informing the customer regarding the estimated costs of spare parts, minimum service charge and delivery date. 5. Testing set for normal operation. 6. Assembling set as per manufacturer's specifications and performing the final test.
4	<p>QUALIFYING NOTES (Entry Requirements, etc.)</p> <ul style="list-style-type: none"> - Physical requirements: absence of color blindness - Educational requirements: Able to understand basic specification

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TASK NO : 1

JOB TITLE : Radio Technician (Broadcasting receivers) L - 2

Obtaining fault symptoms from the customer.

TASK ELEMENTS

1. Receives the complaint about the set from customer.

2 Enquires about the case history of the faulty set. (Since when the set is not working properly, what happened to the set before it stopped working properly, has somebody tried to repair the set before, when was the set bought)

3 Confirms the complaint about the set from customer.

4 Gives the receipt of the set indicating the model number.

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TASK SPECIFICATION

TASK PERFORMANCE REQUIREMENTS

Power Supply Socket (110 V, 220 V, AC), Adapter (1.5 V to 12 V DC).
Multimeter, A Radio Receiver Set, Customer, Record Registry, Receipt Pad.

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TASK PERFORMANCE STANDARDS

- The Case history recorded on the standard form with no omissions or errors.
- The Complain form fitted accurately to condition of radio set (that the set is not working by using correct power supply and controls set according to manufacturer instructions)

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TASK TRAINING DATA					
TASK No.	T.E. No.	TECHNICAL KNOWLEDGE	APPLIED CALCULATION	GRAPHIC INFORMATION	SAFETY AND HYGIENE
1	3	Knowledge of power supply (AC, DC, 110/220 V), ability to select the correct supply source required for the set, ability to use multimeter, ability to detect knobs for tuning, volume control, band selections and power switch.		Read diagram to determine necessary Supply Voltage	Hazards involved in the use of set and tools and dangers of electricity.

TASK PERFORMANCE TEST (SKILL ASSESSMENT)

11	<p>TASK TITLE: Radio Technician (Broadcasting Receivers).</p> <p>TASK NO : 1</p>	<p>LOCATION OF TEST:</p> <p>CANDIDATE'S NAME:</p> <p>EVALUATOR'S NAME:</p>	
12	TEST FACTORS AND ITEMS	STANDARD MET	STANDARD NOT MET (COMMENT)
	<p><u>DID THE CANDIDATE?</u></p> <p>1.1 Receive complaint about the set from the customer.</p> <p>1.2 Make enquires about the case history of the faulty set and recorded on the standard form.</p> <p>1.3 Confirm the fault in presence of customer by using correct power supply and control set according to manufacturer instructions.</p> <p>1.4 Give the receipt to the customer.</p> <p>1.5 Complete the work within the specified time.</p>		

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TASK NO: 2

Dismantling the set

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TASK ELEMENTS

2.1 Disconnects the set from the supply source.

2.2 Selects correct tools.

2.3 Detects the positions of screws and unscrews them.

2.4 Detects the knobs to be removed.

2.5 Locates the locks and unlocks them.

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TASK PERFORMANCE REQUIREMENTS

7 Magnetized flat and Philips type screw-drivers of different sizes, Allen key set, Screw sizes, watchmakers screw driver set.

TASK PERFORMANCE STANDARDS

- Tools selected as required.
- Set disconnected from the supply safely.
- Screws detected and unscrewed without damaging screw head and any parts of the set.
- Knobs detected and removed without damaging key screws & knob neck.
- Locks located and unlocked without breaking them and scratching the set.

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9	10	TASK TRAINING DATA			
TASK No.	T.E. No.	TECHNICAL KNOWLEDGE	APPLIED CALCULATION	GRAPHIC INFORMATION	SAFETY AND HYGIENE
2	1 2 3 4 5	<p>1 Knowledge of handling power cords and battery covers.</p> <p>2 Knowledge and recognition of proper size & types of screw drivers, allen keys.</p> <p>3 Knowledge of detecting the screws concerned for dismantling the set and use of relevant screw drivers.</p> <p>4 Recognition of knobs for dismantling the set.</p> <p>5 Recognition of locks for dismantling the set.</p>		<p>Read symbols for main screws to dismantle the set.</p>	<p>Hazards involved electricity.</p> <p>Safe use of screw driver and allen keys.</p>

TASK PERFORMANCE TEST (SKILL ASSESSMENT)

11	<p>TASK TITLE: Radio Technician (Broadcasting Receivers)</p> <p>TASK NO: 2</p>	<p>LOCATION OF TEST:</p> <p>CANDIDATE'S NAME:</p> <p>EVALUATOR'S NAME:</p>	
12	TEST FACTORS AND ITEMS	STANDARD MET	STANDARD NOT MET (COMMENT)
	<p><u>DID THE CANDIDATE?</u></p> <p>2.1 Disconnect the set from the power supply safely.</p> <p>2.2 Select correct size of screw drivers and align keys.</p> <p>2.3 Recognize and unscrew the screws without damage.</p> <p>2.4 Locate and remove knobs without damage.</p> <p>2.5 Locate and unlocks the locks without breaking them and scratching.</p> <p>2.6 Complete the work within the specified time.</p>		

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TASK NO. 3

Detecting and replacing faulty sections and components

TITLE: Radio Technician (Broadcasting Receivers), L – 2

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TASK ELEMENTS

- 3.1 Identifies the major sections of radio receivers.
- 3.2 Checks visually the fault component, disconnected wires, blown out fuses.
- 3.3 Switches “ON “the set applying required supply voltage.
- 3.4 Checks the power supply section: Transformer, rectifier, filter (Capacitor and Inductors).
- 3.5 Checks the speaker.
- 3.6 Checks the volume control unit.
- 3.7 Checks the output stage of audio amplifier section.
- 3.8 Checks the audio pre-amplifier section.
- 3.9 Checks the detector section.
- 3.10 Checks the intermediate frequency amplifier section.
- 3.11 Checks the mixer section.
- 3.12 Checks the oscillator section.
- 3.13 Checks the radio frequency amplifier section.
- 3.14 Checks the gang capacitor.
- 3.15 Checks the antenna coils.
- 3.16 Checks the band switches.
- 3.17 Checks the position of tuning indicator.
- 3.18 Replaces the tuning cord.

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TASK PERFORMANCE REQUIREMENTS

Flat and Philips type screw driver set, Allen keys, watch maker screw driver set. Soldering iron, desoldering pump, multimeter (20 K/V), Signal injector, soldering injector, soldering lead, Soldering flux, Solder Stand, Work Table, Faulty single/multiband radio receiver, Power socket.

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TASK PERFORMANCE STANDARD

- Faulty section and/or component detected using appropriate tools and measuring instruments, without creating new faults or damages. Soldering desoldering, and continuity measurement of resistance carried out when the set is connected to supply. Meter scale selected in such a way that the meter indicator falls to the middle section of the meter scale. Soldering iron or correct rating selected. Components desoldered using desoldering pump from the printed circuit (PCB) board without damaging the component and PCB track. Pins of the component and the track of the PCB cleaned with appropriate flux before soldering. Solder with appropriate flux applied and covered the contact point bottom coverage and checked for dry soldering.
- The major sections of provided radioreceiver identified.
- Checked for faults detected easily by visual observation.
- Required supply voltage identified, applied and the set switched “ON “
- Power supply section checked and faulty component detected, and replaced.
- Speaker checked and replaced with appropriate ohmic value as original.
- Volume control checked, cleaned and replaced.
- Output stage of audio amplifier section components checked and replaced as per standard No. 1
- Audiopreamplifier section, components checked and replaced as per standard No.1
- Sections components checked and replaced for the task elements No. 9 to 13, as per standard No. 1.
- Gang capacitors checked, cleaned removing all dirt from the component safely and replaced by equivalent values/original.
- Antenna coils checked, replaced and/or repaired with no omissions or errors.
- Band switches identified, checked, cleaned, repaired and/or replaced.
- The position of tuning indicator fixed with no circular scratches on the plate and tuning indicator.
- Tuning cord checked for wear & tear, specified length adjusted, and fixed on guide rollers safely and firmly.

9	10	TASK TRAINING DATA			
TASK No.	T.E. No.	TECHNICAL KNOWLEDGE	APPLIED CALCULATION	GRAPHIC INFORMATION	SAFETY AND HYGIENE
3	<ol style="list-style-type: none"> 1. 2. 3. 4. 5. 6. 7. 	<p>Different sections visualizing the specific components and its layout.</p> <p>Knowledge of detecting faulty parts by visualizing its abnormalities.</p> <p>Knowledge of supply voltage (AC or DC) required for operation of the set.</p> <p>Identification or primary and secondary windings, checked of transformer by using multimeter, measurement or primary and secondary voltages, checking the fuse and identifying the rating, checking the diode with multimeter, identifying zener and rectifier diode, identifying the polarity of the diodes, identifying the filter capacitor and checks it for open or short circuit using multimeter identifying the polarity, checks for the output voltage, knowledge of secondary cells its sizes voltages ratings, polarities and series and parallel connection.</p> <p>Knowledge of testing of speaker using multimeter, identifying of wattage and importance of the speaker.</p> <p>Knowledge of variable resistors, identifying the correct tags and checking of volume controls using multimeter and cleaning of volume control using suitable fluids.</p> <p>Knowledge of checking transistors, coils, resistors, capacitors, matching transformers using multimeter, knowledge of color codes, knowledge of checking audio amplifier output stage using a simple signal injector, knowledge of measuring DC voltages at different points of the circuit</p>	<p>Read the information written on the speaker.</p>	<p>Read printed matters in PCB's cases, wires transformers.</p>	<p>Electric hazard & damage to the set.</p> <p>Safe use of cleaning fluids.</p>

3	9.	Knowledge checking diode and polarity using the multimeter.			
	10.	Knowledge of checking transistors, coils, resistors, capacitors, matching transformers using multimeter, knowledge of color codes, knowledge of checking audio amplifier output stage using a simple signal injector, knowledge of measuring DC voltages at different points of the circuit.			Safe use of cleaning fluids.
	11.	Knowledge of checking transistors, coils, resistors, capacitors, matching transformers using multimeter, knowledge of color codes, knowledge of checking audio amplifier output stage using a simple signal injector, knowledge of measuring DC voltages at different points of the circuit.			
	12.	Knowledge of checking transistors, coils, resistors, capacitors, matching transformer using multimeter, knowledge of color codes, knowledge of checking audio amplifier output stage using a simple signal injector, knowledge of measuring DC voltages at different points of the circuits.			Safe use of cleaning fluids.
	13.	Knowledge of checking transistors, coils, resistors, capacitors, matching transformers using multimeter, knowledge of checking audio amplifier output stage using a simple signal injector, knowledge of measuring DC voltages at different points of the circuit.			
	14.	Knowledge of construction of gang capacitors. Knowledge of identify gang capacitors terminals, cleaning the plates and repairing.			
	15.	Knowledge and use of coils, identification of SE/MW coils, ferrite rods and its importance continuity tests, SWG of coil size, coil windings.			
	16.	Knowledge of construction, types, connections, cleaning, replacement and use of band switches.			

3	17.	Knowledge of positioning of indicators related to relevant broadcasting stations.			
	18.	Knowledge of construction, types, size, wear and tear, sagging and correct positioning and replacement of tuning cords.			

TASK PERFORMANCE TEST (SKILL ASSESSMENT)

11	TASK TITLE: Radio Technician (Broadcasting Receivers) TASK NO: 3	LOCATION OF TEST: CANDIDATE'S NAME: EVALUATOR'S NAME:	
12	<p align="center">TEST FACTORS AND ITEMS</p>	<p align="center">STANDARD MET</p>	<p align="center">STANDARD NOT MET (COMMENT)</p>
	<p><u>DID THE CANDIDATE?</u></p> <p>3.1 Select required tools and measuring equipment. 3.2 Set correct range of scale of the multimeter. 3.3 Switch ' OFF ' the set before measuring the value of resistance, desoldering and soldering. 3.4 Remove the component from the PCB without damaging it or PCB track. 3.5 Create new faults or damage during the repair of the set provided. 3.6 Clear pins and track of PCB before soldering. 3.7 Solder as per standard No. one. 3.8 Detect faulty section and or the component. 3.9 Repair or replace the faulty component. 3.10 Fix the tuning indicators to its proper position. 3.11 Replace tuning cord.</p>		

TASK SPECIFICATION

5	TASK NO: 4 Informing the customer regarding the estimated costs, minimum service Charge and delivery date. JOB TITLE: Color TV receiver technician, L – 2
6	TASK ELEMENTS 4.1 Receives customer order. 4.2 Informs the customer regarding minimum service charge. 4.3 Estimates the cost for repair. 4.4 Suggests the delivery date.

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TASK PERFORMANCE REQUIREMENTS

Knowledge of minimum service charge, up to date information regarding the cost of components involved, knowledge of the required time for simple and complicated repair.

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TASK PERFORMANCE STANDARDS

The customer informed regarding minimum service charge, repair cost and the delivery date within the accuracy of +_1 day.

- The customer informed the minimum service charge required.
- The customer informed the approximate repair cost within the tolerance of + 10%.
- The customer informed the approximate delivery date.

9	10	TASK TRAINING DATA			
TASK No.	T.E. No.	TECHNICAL KNOWLEDGE	APPLIED CALCULATION	GRAPHIC INFORMATION	SAFETY AND HYGIENE
4	<ol style="list-style-type: none"> 1. 2. 3. 	<p>Knowledge of current rate of minimum charge.</p> <p>Knowledge of current prices of components involved.</p> <p>Knowledge of the required time for simple and complicated repairs.</p>	Simple arithmetic		

TASK PERFORMANCE TEST (SKILL ASSESSMENT)

11	<p>TASK TITLE: Radio Technician (Broadcasting Receivers)</p> <p>TASK NO: 4</p>	<p>LOCATION OF TEST:</p> <p>CANDIDATE'S NAME:</p> <p>EVALUATOR'S NAME:</p>	
12	TEST FACTORS AND ITEMS	STANDARD MET	STANDARD NOT MET (COMMENT)
	<p><u>DID THE CANDIDATE?</u></p> <p>4.1 Inform the customer regarding minimum service charge, repairs cost and the delivery date within the accuracy of +_1 day.</p> <p>4.2 Inform the customer the minimum service charge required.</p> <p>4.3 Inform the appropriate repair cost within the tolerance of + 10%.</p> <p>4.4 Inform the customer the approximate delivery date.</p>		

TASK SPECIFICATION

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TASK NO: Five

JOB TITLE: Radio Technician (Broadcasting Receiver) L - 2

Testing set for normal operation.

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TASK ELEMENTS

- 5.1 Checks for solder drops, bare wires, metallic objects left on the PCB.
- 5.2 Positions the PCB and other required blocks as fitted originally.
- 5.3 Tests for the normal operation of the set.

TASK SPECIFICATION

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TASK PERFORMANCE REQUIREMENTS

Flat and Philips type screw driver set, Allen keys, watch maker screw driver set. Soldering iron, desoldering pump, multimeter (20 K/V), Signal injector , soldering lead, Soldering flux, Solder stand, Work table, Faulty signal/multiband receiver, Power Socket,

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TASK PERFORMANCE STANDARDS

- Set checked for solder drops, bare wires and metallic objects left on the PCB and removed if any.
- PCB and other required blocks positioned as per manufacturer's specification/manual.
- Set tested for its normal operation satisfactorily.

9	10	TASK TRAINING DATA			
TASK No. 1	T.E. No.	TECHNICAL KNOWLEDGE	APPLIED CALCULATION	GRAPHIC INFORMATION	SAFETY AND HYGIENE
5	<ol style="list-style-type: none"> 1. 2. 3. 	<p>Knowledge of short circuits and its consequences.</p> <p>Knowledge of different control knobs (Volume, tone tuning)</p> <p>Knowledge of band switch, internal and external antenna and station positioning.</p>		Dial tuning/indication.	Hazards involved in using electrical equipment.

TASK PERFORMANCE TEST (SKILL ASSESSMENT)

11	<p>TASK TITLE: Radio Technician (Broadcasting Receivers) .</p> <p>TASK NO : 5</p>	<p>LOCATION OF TEST:</p> <p>CANDIDATE'S NAME:</p> <p>EVALUATOR'S NAME:</p>	
12	<p align="center">TEST FACTORS AND ITEMS</p>	<p align="center">STANDARD MET</p>	<p align="center">STANDARD NOT MET (COMMENT)</p>
	<p><u>DID THE CANDIDATE?</u></p> <p>5.1 Check for solder drops bare wires, metallic objects left on the PCB and remove if any.</p> <p>5.2 Position the PCB and other required blocks such as transformers, gang capacitor etc as fitted originally.</p> <p>5.3 Select correct position of band switch, volume control, tuning indicator, power ‘ ON/OFF ‘ switch.</p> <p>5.4 Perform the test for normal operation of the set.</p> <p>5.5 Complete the test within specified time.</p>		

TASK SPECIFICATION

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TASK NO: 6

JOB TITLE: Radio Technician (Broadcasting Receiver) L - 2

Assembling the set and performing the final test..

TASK ELEMENTS

6.1 Disconnects the set from the power supply source.

6.2 Selects correct tools for assembling the set.

6.3 Selects correct type of screws for each screw hole.

6.4 Positions the locks.

6.5 Fixes the knobs.

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6.6 Assembles the set as per manufacturer's specification/or fitted originally.

6.7 Checks whether all screws/locks and washers are used.

6.8 Performs the final test.

TASK SPECIFICATION

7 **TASK PERFORMANCE REQUIREMENTS**
Magnetized flat and Philips type screw-drivers of different sizes, Allen key set, Screw sizes, Watchmakers screw driver set.

8 **TASK PERFORMANCE STANDARDS**

- Tools selected as required.
- Set disconnected from the supply safely.
- Cover checked for the looseness.
- Final testing performed for normal operation.

TASK PERFORMANCE TEST (SKILL ASSESSMENT)

11	<p>TASK TITLE: Radio Technician (Broadcasting Receivers) .</p> <p>TASK NO: 6</p>	<p>LOCATION OF TEST:</p> <p>CANDIDATE'S NAME:</p> <p>EVALUATOR'S NAME:</p>	
12	TEST FACTORS AND ITEMS	STANDARD MET	STANDARD NOT MET (COMMENT)
	<p><u>DID THE CANDIDATE?</u></p> <p>6.1 Remove power cord from the supply source safely.</p> <p>6.2 Select correct tools assembling.</p> <p>6.3 Select correct screws to be fitted.</p> <p>6.4 Position the lock as specified originally.</p> <p>6.5 Check for looseness of the cover fixed.</p> <p>6.6 The set assembled as per manufacturer's specification/or fitted originally.</p> <p>6.7 Use and check whether all screws/locks and washers are properly fitted.</p> <p>6.8 Perform final test for normal operation.</p> <p>6.9 Complete the task within the specified time.</p>		

