

National Occupational Skill Standard (NOSS)

Occupational Title : Electrical Appliance Repairer

Level : 2

Sector : Electrical

Sub - Sector : Electrical Appliances

NOSS ID/NSCO ID :

ISCO NO :



Council for Technical Education and Vocational Training

NATIONAL SKILL TESTING BOARD

Madhyapur Thimi-17, Sanothimi, Bhaktapur, Nepal

Developed: 28-06-2025 (14-03-2082)



2045

The National Skills Standards and Test was developed by:

No	Name	Designation	Organization
1.	Mr. Achyut Prasad Pradhan	Advisor	Executive Director, Water Resources & Planning Commission, Singh Darbar
2.	Mr. Karuna Govinda Shrestha	Coordinator	Manager, Nepal Electricity Authority Meen Bhawan, Kathmandu
3.	Mr. Lekh Ratna Shakya	Member Secretary	Technical Officer (Electrical) Skill Testing Division/CTEVT
4.	Mr. Suresh Chapagain	Member	Skill Standard Development Unit
5.	Mr. Babu Ratna Khadki	Member	Supervisor, Hotel Soaltee Inn. Tahachal, Kathmandu.
6.	Mr. Mankaji Shrestha	Member	Asst. Manager, Electrical Engineer, NEA Meen Bhawan, Kathmandu
7.	Mr. Diwakar Raj Pant	Member	M.K. Shrestha and Associates Naya Baneshwor, Kathmandu
8.	Mr. Shankar Man Shrestha	Member	Instructor, Electrical Engineer, Nepal telecommunication Corporation, Singhadarbar, Kathmandu
9.	Mr. Ramesh Hamal	Guest Member	Electrical Engineer, Nepal Electricity Authority Meen Bhawan, Kathmandu
10.	Mr. Kapil Prasad Upadhyaya	Member	Training Coordinator, Nepal Electrical Authority Training Division, Bhrikuti Mandap, Kathmandu
11.	Mr. Nigam Raj Rimal	Guest Member	Electrical Engineer, Nepal Electricity Authority

**Approved by Tripartite National Skill Testing Board.
1995(2051/052, Baisakh)**



NOSS ID: #

Developed Date: 2025-06-28

Revision Number: ##

Revised Date: dd/mm/yy

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The National Skills Standards and Test was Revised by:

No	Name	Designation	Organization
1.	Er. Jayaiswer Man Pradhan	Coordinator	Electrical Technical Sub Committee, Kathmandu Metropolitan City, Kathmandu
2.	Dr. Kul Bahadur Basnet	Director	National Skill Testing Board Sanothimi, Bhaktapur
3.	Mr. Lekh Ratna Shakya	Member	Ex-Deputy Director/Expert CTEVT, Sanothimi, Bhaktapur
4.	Mr. Kapil Raj Tiwari	Member	Balaju School of Engineering and Technology Balaju, Kathmandu
5.	Er. Raj Mani Bajagain	Member	Nepal Electricity Authority, Thimi Distribution and Consumer Services, Bhaktapur
6.	Er. Namrata Tusuju Shrestha	Member	Kathmandu University Dhulikhel, Kavre
7.	Mr. Tulsi K.C	Sr. Skill Testing Officer	National Skill Testing Board Sanothimi, Bhaktapur
8.	Mr. Ishwar Chandra Ghimire	Skill Testing Officer	National Skill Testing Board Sanothimi, Bhaktapur
9.	Mr. Gobinda Paudel	Member Secretary	National Skill Testing Board Sanothimi, Bhaktapur

**Approved by Tripartite National Skill Testing Board.
2013**



NOSS ID: #

Developed Date: 2025-06-28

Revision Number: ##

Revised Date: dd/mm/yy

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The National Occupational Skill Standard Developed by:

No	Name	Designation	Organization
1.	Er. JaJayiswer Man Pradhan	Coordinator	Electrical Technical Sub Committee National Skill Testing Board, Sanothimi, Bhaktapur
2.	Mr. Bhuvaneshor Dhungana	Member	National Skill Testing Board Sanothimi, Bhaktapur
3.	Mr. Surendra Shrestha	Member	Subi Electro Machinery Gaththaghar, Bhaktapur
4.	Ms. Indu Shahu	Member	Indu Electro Service Jadibuti, Kathmandu
5.	Mr. Raghubar Lal Joshi	Member	Balaju School of Engineering and Technology (BSET) Balaju, Kathmandu
6.	Mr. Anil Shrestha	Member	D. Aires Electricals & Refrigeration Pulchowk, Lalitpur
7.	Mr. Tulsi Bahadur Nemkul	Member	SKILL Nepal Satdobato, Lalitpur
8.	Mr. Shiva Nanda Mishra	Member	National Skill Testing Board Sanothimi, Bhaktapur
9.	Mr. Dipak Sainju	Member Secretary	Electrical Technical Sub Committee National Skill Testing Board, Sanothimi, Bhaktapur
10.	Mr. Suresh Maharjan	Facilitator	Sr. Skill Testing Officer National Skill Testing Board, Sanothimi, Bhaktapur
11.	Mr. Surya Prasad Adhikari	Facilitator	Skill Testing Officer National Skill Testing Board, Sanothimi, Bhaktapur

Recommended by Electrical Technical Sub Committee: 28 June 2025 (14 Ashadh 2082)



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1	Occupational Title: Electrical Appliances Repairer Level: 2
2	Job Description: Electrical Appliances Repairer L2, repairs motorized electrical appliances, and repairs non-motorized electrical appliances.
3	UNITS OF COMPETENCY: 1. Repair motorized electrical appliances 2. Repair non-motorized electrical appliances 3. Perform communication 4. Develop professionalism <i>*Note: Units 3 and 4 are not for testing purpose.</i>
4	Qualifying Notes/Prerequisites: <ul style="list-style-type: none"> • Physical Requirements: Sound health • Entry Requirements: As per NSTB rules Additional Information: <ul style="list-style-type: none"> • Assessment Types: Performance test only • Assessment Duration: 8:00 to 10:00 hours (Full competency only) • Recommended Group Size: 6 to 8 candidates



5	Unit No: 1 Unit Title: Repair motorized electrical appliances	Unit code:
	<p style="text-align: center;">Elements of competency</p> <p>1.1 Prepare tools, equipment and materials</p> <p>1.2 Diagnose faults</p> <p>1.3 Estimate repair works</p>	<p style="text-align: center;">Performance standards</p> <p>1.1.1 Personal Protective Equipment (PPE) used in accordance with task requirements.</p> <p>1.1.2 Tools and equipment collected and checked for serviceability.</p> <p>1.1.3 Faulty tools and equipment tagged and reported to supervisor.</p> <p>1.1.4 Materials collected and arranged in workplace as per task requirements.</p> <p>1.2.1 Customer complaints and service history interpreted to identify possible faults.</p> <p>1.2.2 External conditions of motorized electrical appliances visually inspected for physical damage and failure.</p> <p>1.2.3 Electrical parameters measured and condition of appliances determined.</p> <p>1.2.4 Functional testing carried out and identified signs of malfunctions.</p> <p>1.2.5 Warranty seal checked, appliances marked and dismantled as per manufacturer guidelines.</p> <p>1.2.6 Internal components and circuits inspected and tested for signs of malfunctions.</p> <p>1.2.7 Faulty components and wiring identified based on faulty symptoms, visual inspection, and test results.</p> <p>1.2.8 Faults recorded and reported to concerned authority as per workplace procedure.</p> <p>1.3.1 Required replacement components listed based on identified faults.</p> <p>1.3.2 Cost of listed materials calculated based on market price.</p> <p>1.3.3 Labour and service charge calculated considering complexity and scope of repair work as per workplace procedures.</p>



		1.3.4 Total repair cost calculated, informed to customer/supervisor, and take approval before commencing repair.
1.4	Repair faults	<p>1.4.1 Faulty wiring and circuit repaired as per wiring and circuit diagram.</p> <p>1.4.2 Faulty components repaired or replaced with new one with same specification.</p> <p>1.4.3 Moving components lubricated as per manufacturer instructions.</p> <p>1.4.4 Repaired or new component tested and fitted into its original position.</p> <p>1.4.5 Repaired appliances verified with functional testing and checking its performance.</p>
1.5	Assemble motorized electrical appliances	<p>1.5.1 All removed internal components fitted in their original position as per manufacturer instruction.</p> <p>1.5.2 All wiring connections reconnected as per wiring diagram.</p> <p>1.5.3 External cover/housing installed and tightened in correct sequence as per marking and manufacturer's instruction.</p> <p>1.5.4 Repaired appliances verified with functional testing and checking its performance.</p> <p>1.5.5 Exterior surface wiped and repaired label placed as per workplace procedure.</p> <p>1.5.6 Repaired details recorded as per workplace procedures.</p>
1.6	Clean workplace	<p>1.6.1 Unused materials collected and stored in designated area.</p> <p>1.6.2 Tools and equipment cleaned, lubricated, checked for damage and stored in designated area.</p> <p>1.6.3 Workplace cleaned neatly and waste disposed as per 3R's principle at designated area.</p>



<p>6</p>	<p>Task Performance Requirements (Tools, Equipment and Materials):</p> <ul style="list-style-type: none"> Motorized electrical appliances, multi-meter, megger, clamp on meter, screwdriver set, hammer, spanner set, line tester, socket spanner set, wire stripper, side cutter, nose plier, combination plier, continuity tester, adjustable wrench, Allen key, puller, reamer, mixture/grinder repairing tool set, hack saw with blade, knife, marker, center punch, soldering (iron/wire/flux), de-soldering pump, glue gun, glue stick, adhesive materials, heat shrink tube, file, cleaning brush, oil can, lubricants, vacuum, blower, crimping tools, cable shoe, anti-rust, vice plier, bench vice, coupling, bench, tool box, label sticker, magnifier, pen, pencil, note book, testing board, storage trays/zip-lock bags, blow lamp/torch, wire , cable, cable tie, PVC tape, electrical wires, replacement components, cleaning cloth, broom, dust pan, dust bin, and personal protective equipment (PPE)
<p>7</p>	<p>Safety and Hygiene (Occupational Health and Safety):</p> <ul style="list-style-type: none"> Use personal protective equipment. Handle tools, equipment and materials safely. Prevent from electrical hazards.



8	Required Knowledge		
	Technical Knowledge	Applied Calculation	Graphical Information
	<ul style="list-style-type: none"> • Tools, equipment and materials <ul style="list-style-type: none"> ○ Types ○ Uses ○ Safe handling ○ Storage • Electrical appliances <ul style="list-style-type: none"> ○ Introduction ○ Motorized and non-motorized electrical appliances ○ Application of electrical appliances • Motorized electrical appliances <ul style="list-style-type: none"> ○ Introduction ○ Types and functions of motorized electrical appliances ○ Components of motorized appliances and their functions • Electrical parameters <ul style="list-style-type: none"> ○ Current ○ Voltage ○ Resistance ○ Frequency ○ Power 	<ul style="list-style-type: none"> • Perform unit conversion • Calculate current, voltage, resistance and power 	<ul style="list-style-type: none"> • Read and interpret circuit diagram • Read and interpret nameplate • Read and interpret manufacturer' instruction



	<ul style="list-style-type: none"> • Standard voltage and frequency in Nepal • Relationship between electrical parameters (Ohms law) • Earthing/grounding • Estimating and costing • AC and DC source • Basic electrical circuit: Open, close, short, series and parallel • Electrical and electronics symbols • Electrical components <ul style="list-style-type: none"> ○ Resistor ○ Inductor ○ Capacitor ○ Thermostat ○ Fuse ○ Switch ○ Indicator ○ Relay • Conductor and insulator • Electronics components <ul style="list-style-type: none"> ○ Resistor ○ Inductor ○ Capacitor ○ Diode 		
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	<ul style="list-style-type: none"> ○ Transistor ○ IC ○ Spike ○ PCB ● Power factor and its importance ● Controlling and protective devices ● Electrical wire and cable ● Troubleshooting of electrical and electronics components <ul style="list-style-type: none"> ○ Visual inspection and testing (Current, voltage, continuity, insulation and functional test) ○ Common faults and possible causes ○ Dismantling and assembling process and techniques ○ Marking and tagging process ○ Soldering and de-soldering techniques ○ Technical documentation and reporting ● Customer handling technique ● Cleaning and waste management ● Concept of e-waste ● Record keeping and documentation ● Importance of first aid ● Occupational health and safety rules and regulations 		
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9	Assessment of Competency				
Unit: 1					
Unit Title: Repair motorized electrical appliances					
Candidate Details			Assessors Detail		
Candidate's Name:			Assessors' Name		ID/License No:
Registration Number:			1.		
Symbol No:			2.		
Test Centre:			3.		
Test Date:					
Element of competency	Performance Standards	Standard Met	Standard Not Met	Evidence Type	Comments
1.1 Prepare tools, equipment and materials	1.1.1 Personal Protective Equipment (PPE) used in accordance with task requirements.				
	1.1.2 Tools and equipment collected and checked for serviceability.				
	1.1.3 Faulty tools and equipment tagged and reported to supervisor.				
	1.1.4 Materials collected and arranged in workplace as per task requirements.				
1.2 Diagnose faults	1.2.1 Customer complaints and service history interpreted to identify possible faults.				



	<p>1.2.2 External conditions of motorized electrical appliances visually inspected for physical damage and failure.</p> <p>1.2.3 Electrical parameters measured and condition of appliances determined.</p> <p>1.2.4 Functional testing carried out and identified signs of malfunctions.</p> <p>1.2.5 Warranty seal checked, appliances marked and dismantled as per manufacturer guidelines.</p> <p>1.2.6 Internal components and circuits inspected and tested for signs of malfunctions.</p> <p>1.2.7 Faulty components and wiring identified based on faulty symptoms, visual inspection, and test results.</p> <p>1.2.8 Faults recorded and reported to concerned authority as per workplace procedure.</p>				
<p>1.3 Estimate repair works</p>	<p>1.3.1 Required replacement components listed based on identified faults.</p> <p>1.3.2 Cost of listed materials calculated based on market price.</p> <p>1.3.3 Labour and service charge calculated considering complexity and scope of repair work as per workplace procedures.</p>				



	<p>1.3.4 Total repair cost calculated, informed to customer/supervisor, and take approval before commencing repair.</p>				
<p>1.4 Repair faults</p>	<p>1.4.1 Faulty wiring and circuit repaired as per wiring and circuit diagram.</p> <p>1.4.2 Faulty components repaired or replaced with new one with same specification.</p> <p>1.4.3 Moving components lubricated as per manufacturer instructions.</p> <p>1.4.4 Repaired or new component tested and fitted into its original position.</p> <p>1.4.5 Repaired appliances verified with functional testing and checking its performance.</p>				
<p>1.5 Assemble motorized electrical appliances</p>	<p>1.5.1 All removed internal components fitted in their original position as per manufacturer instruction.</p> <p>1.5.2 All wiring connections reconnected as per wiring diagram.</p> <p>1.5.3 External cover/housing installed and tightened in correct sequence as per marking and manufacturer's instruction.</p> <p>1.5.4 Repaired appliances verified with functional testing and checking its performance.</p>				



	1.5.5 Exterior surface wiped and repaired label placed as per workplace procedure.				
	1.5.6 Repaired details recorded as per workplace procedures.				
1.6 Clean workplace	1.6.1 Unused materials collected and stored in designated area.				
	1.6.2 Tools and equipment cleaned, lubricated, checked for damage and stored in designated area.				
	1.6.3 Workplace cleaned neatly and waste disposed as per 3R's principle at designated area.				

WT- Written Test

OQ- Oral Question

PT- Practical Test

DO – Direct Observation

SR- Supervisor’s report

SN–Simulation

RP- Role Play

PG –Photographs

VD- Video

CT – Certificates

TS – Testimonials (Reward)

PP – Product Produced

CS – Case Study



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Range Statement

Variable	Range
Personal Protective Equipment	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • Helmet • Hair net • Apron/Safety Jacket • Goggles • Gloves • Safety shoes • Mask • Anti-static wrist strap
Motorized electrical appliances	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • Water pump • Mixture/ Grinder/ Blender • Vacuum cleaner • Drill machine • Hair Dryer • Semi- automatic washing machine • Air fryer • Grass mower • Cooler • Fan • Fan heater • Grill • Dough machine • Chimney



<p>Physical damage and failure</p>	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • Crack • Broken • Burn marks • Melted • Missing parts • Loose parts/components • Cut • Wear • Water damage • Corrosion • Leakage
<p>Electrical parameters</p>	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • Continuity • Voltage • Current • Resistance • Insulation
<p>Signs of malfunctions</p>	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • No power • Noise • Vibration • Overheating • Leakage • Smell (burnt smell) • Choking • Humming



Faulty components

May include but not limited to:

- Mechanical
 - Bush
 - Bearing
 - Impeller
 - Seal
 - Gasket
 - Cooling fan
 - Housing
 - Coupling
 - Belt
 - Pulley
 - Gear
 - Fan blade
- Electrical
 - Armature
 - Field coil
 - Carbon brush
 - Terminals
 - Transformer
 - Thermal protector
 - Switch
 - Solenoid valve
 - Non polar capacitor
 - Timer
 - Rod heater
 - Heating element
 - Swing motor
 - Fuse
 - Relay
 - Power cord



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	<ul style="list-style-type: none"> ○ Connector ● Electronics <ul style="list-style-type: none"> ○ Resistor ○ Inductor ○ Diode ○ Polar capacitor ○ Transistor ○ Regulating IC ○ Spike ○ PCB
3R's principle	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> ● Reduce ● Reuse ● Recycle



5	Unit No: 2		Unit code:
	Unit Title: Repair non-motorized electrical appliances		
	Elements of competency	Performance standards	
	2.1 Prepare tools, equipment and materials	2.1.1 Personal Protective Equipment (PPE) used in accordance with task requirements. 2.1.2 Tools and equipment collected and checked for serviceability. 2.1.3 Faulty tools and equipment tagged and reported to supervisor. 2.1.4 Materials collected and arranged in workplace as per task requirements.	
2.2 Diagnose faults	2.2.1 Customer complaints and service history interpreted to identify possible faults. 2.2.2 External conditions of non-motorized electrical appliances visually inspected for physical damage and failure . 2.2.3 Electrical parameters measured and condition of appliances determined. 2.2.4 Functional testing carried out and identified signs of malfunctions . 2.2.5 Warranty seal checked, appliances marked and dismantled as per manufacturer guidelines. 2.2.6 Internal components and circuits inspected and tested for signs of malfunctions. 2.2.7 Faulty components and wiring identified based on faulty symptoms, visual inspection, and test results. 2.2.8 Faults recorded and reported to concerned authority as per workplace procedure.		
2.3 Estimate repair works	2.3.1 Required replacement components listed based on identified faults. (All the components that need to be replaced is listed based on identified faults.) 2.3.2 Cost of listed materials calculated based on market price.		



		<p>2.3.3 Labour and service charge calculated considering complexity and scope of repair work as per workplace procedures.</p> <p>2.3.4 Total repair cost calculated, informed to customer/supervisor, and take approval before commencing repair.</p>
2.4	Repair faults	<p>2.4.1 Faulty wiring and circuit repaired as per wiring and circuit diagram.</p> <p>2.4.2 Faulty components repaired or replaced with new one with same specification.</p> <p>2.4.3 Components requiring lubrication lubricated as per manufacturer instructions.</p> <p>2.4.4 Repaired or new component tested and fitted into its original position.</p> <p>2.4.5 Repaired appliances verified with functional testing and checking its performance.</p>
2.5	Assemble non-motorized electrical appliances	<p>2.5.1 All removed internal components fitted in their original position as per manufacturer instruction.</p> <p>2.5.2 All wiring connections and connectors reconnected as per wiring diagram.</p> <p>2.5.3 External cover/housing installed and tightened in correct sequence as per marking and manufacturer's instruction.</p> <p>2.5.4 Repaired appliances verified with functional testing and checking its performance.</p> <p>2.5.5 Exterior surface wiped and repair label placed as per workplace procedure.</p> <p>2.5.6 Repaired details recorded as per workplace procedures.</p>
2.6	Clean workplace	<p>2.6.1 Unused materials collected and stored in designated area.</p> <p>2.6.2 Tools and equipment cleaned, lubricated, checked for damage and stored in designated area.</p> <p>2.6.3 Workplace cleaned neatly and waste disposed as per 3R's principle at designated area.</p>



<p>6</p>	<p>Task Performance Requirements (Tools, Equipment and Materials):</p> <ul style="list-style-type: none"> • Non-motorized electrical appliances, multi-meter, megger, clamp on meter, screwdriver set, hammer, spanner set, line tester, socket spanner set, wire stripper, side cutter, nose plier, combination plier, continuity tester, adjustable wrench, Allen key, reamer, hack saw with blade, knife, marker, center punch, soldering (iron/wire/flux), de- soldering pump, glue gun, glue stick, adhesive material, file, cleaning brush, vacuum, blower, crimping tools, cable shoe, anti-rust, vice plier, bench vice, bench, tool box, label sticker, magnifier, pen, pencil, note book, testing board, storage trays/zip-lock bags, blow lamp/torch, PVC tape, electrical wires, replacement components, cleaning cloth, broom, dust pan, dust bin, and personal protective equipment (PPE)
<p>7</p>	<p>Safety and Hygiene (Occupational Health and Safety):</p> <ul style="list-style-type: none"> • Use personal protective equipment. • Handle tools, equipment and materials safely. • Prevent from electrical hazards.



8	Required Knowledge		
	Technical Knowledge	Applied Calculation	Graphical Information
	<ul style="list-style-type: none"> • Tools, equipment and materials <ul style="list-style-type: none"> ○ Types ○ Uses ○ Safe handling ○ Storage • Non-motorized appliances <ul style="list-style-type: none"> ○ Introduction ○ Types and functions of motorized electrical appliances ○ Working principles of electric motor used in appliances ○ Components of motorized appliances and their functions • Electrical parameters <ul style="list-style-type: none"> ○ Current ○ Voltage ○ Resistance ○ Frequency ○ Power • Relationship between electrical parameters (Ohms law) • AC and DC source and circuit • Basic electrical circuit: Open, close, short, series and parallel 	<ul style="list-style-type: none"> • Perform unit conversion • Calculate current, voltage, resistance and power 	<ul style="list-style-type: none"> • Read and interpret circuit diagram • Read and interpret nameplate • Read and interpret manufacturer' instruction



- Electrical symbols
- Electrical components
 - Resistor
 - Thermostat
 - Thermal fuse
 - Magnet
 - Warm plate
 - Heating element
- Conductor and insulator
- Controlling and protective devices
- Electrical wire and cable
- Troubleshooting electrical components
 - Customer handling technique
 - Visual inspection and testing (Current, voltage, continuity and functional test)
 - Common faults and possible cause
 - Dismantling and assembling process and techniques
 - Marking and tagging process
 - Soldering and de-soldering techniques
 - Technical documentation and reporting
- Cleaning and waste management



- Record keeping and documentation
- Importance of first aid
- Occupational health and safety rules and regulations



9	Assessment of Competency						
Unit: 2							
Unit Title: Repair non-motorized electrical appliances							
Candidate Details				Assessors Detail			
Candidate's Name:				Assessors' Name		ID/License No:	
Registration Number:				1.			
Symbol No:				2.			
Test Centre:				3.			
Test Date:							
Element of competency	Performance Standards			Standard Met	Standard Not Met	Evidence Type	Comments
2.1 Prepare tools, equipment and materials	2.1.1 Personal Protective Equipment (PPE) used in accordance with task requirements.						
	2.1.2 Tools and equipment collected and checked for serviceability.						
	2.1.3 Faulty tools and equipment tagged and reported to supervisor.						
	2.1.4 Materials collected and arranged in workplace as per task requirements.						
2.2 Diagnose faults	2.2.1 Customer complaints and service history interpreted to identify possible faults.						



	<p>2.2.2 External conditions of <i>non-motorized electrical appliances</i> visually inspected for <i>physical damage and failure</i>.</p> <p>2.2.3 <i>Electrical parameters</i> measured and condition of appliances determined.</p> <p>2.2.4 Functional testing carried out and identified <i>signs of malfunctions</i>.</p> <p>2.2.5 Warranty seal checked, appliances marked and dismantled as per manufacturer guidelines.</p> <p>2.2.6 Internal components and circuits inspected and tested for signs of malfunctions.</p> <p>2.2.7 <i>Faulty components</i> and wiring identified based on faulty symptoms, visual inspection, and test results.</p> <p>2.2.8 Faults recorded and reported to concerned authority as per workplace procedure.</p>				
<p>2.3 Estimate repair works</p>	<p>2.3.1 Required replacement components listed based on identified faults. (All the components that need to be replaced is listed based on identified faults.)</p> <p>2.3.2 Cost of listed materials calculated based on market price.</p> <p>2.3.3 Labour and service charge calculated considering complexity and scope of repair work as per workplace procedures.</p>				



	<p>2.3.4 Total repair cost calculated, informed to customer/supervisor, and take approval before commencing repair.</p>				
<p>2.4 Repair faults</p>	<p>2.4.1 Faulty wiring and circuit repaired as per wiring and circuit diagram.</p> <p>2.4.2 Faulty components repaired or replaced with new one with same specification.</p> <p>2.4.3 Components requiring lubrication lubricated as per manufacturer instructions.</p> <p>2.4.4 Repaired or new component tested and fitted into its original position.</p> <p>2.4.5 Repaired appliances verified with functional testing and checking its performance.</p>				
<p>2.5 Assemble non-motorized electrical appliances</p>	<p>2.5.1 All removed internal components fitted in their original position as per manufacturer instruction.</p> <p>2.5.2 All wiring connections and connectors reconnected as per wiring diagram.</p> <p>2.5.3 External cover/housing installed and tightened in correct sequence as per marking and manufacturer's instruction.</p> <p>2.5.4 Repaired appliances verified with functional testing and checking its performance.</p>				



	2.5.5 Exterior surface wiped and repair label placed as per workplace procedure.				
	2.5.6 Repaired details recorded as per workplace procedures.				
2.6 Clean workplace	2.6.1 Unused materials collected and stored in designated area.				
	2.6.2 Tools and equipment cleaned, lubricated, checked for damage and stored in designated area.				
	2.6.3 Workplace cleaned neatly and waste disposed as per 3R's principle at designated area.				

WT- Written Test

OQ- Oral Question

PT- Practical Test

DO – Direct Observation

SR- Supervisor’s report

SN–Simulation

RP- Role Play

PG –Photographs

VD- Video

CT – Certificates

TS – Testimonials (Reward)

PP – Product Produced

CS – Case Study



NOSS ID: #

Developed Date: 2025-06-28

Revision Number: ##

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Range Statement

Variable	Range
Personal Protective Equipment	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • Helmet • Hair net • Apron/Safety Jacket • Goggles • Gloves • Safety shoes • Mask • Anti-static wrist strap
Non-motorized appliances	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • Rice cooker • Induction rice cooker • Iron • Geyser • Water dispenser • Steamer • Water purifier • Coffee maker • Inverter • Micro wave oven • Oven • Induction cooker • Infrared heater • Room heater



Physical damage and failure	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • Crack • Broken • Burn marks • Melted • Missing parts • Loose parts/components • Cut • Wear • Water damage • Corrosion • Leakage
Electrical parameters	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • Continuity • Voltage • Resistance • Insulation
Signs of malfunctions	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • No power • Noise • Overheating • Leakage • Smell (burnt smell)
Faulty components	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • Switch • Magnetron



	<ul style="list-style-type: none"> • Magnet(rice cooker) • Indicator • Connector/ terminal • Thermostat • Heating element • Warm plate • Transformer • Thermal fuse • Capacitor • Temperature controller • Thermo couple • Fuse • Resistor • Diode • Transistor • Switching IC • Regulating IC • Spike • PCB
3R's principle	<p><i>May include but not limited to:</i></p> <ul style="list-style-type: none"> • Reduce • Reuse • Recycle

