National Vocational Certificate
Level 2 in Electronic Home Appliances Technician)

Competency Standards

NATIONAL VOCATIONAL & TECHNICAL TRAINING COMMISSION

NAVTTC نیوٹک

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Table of Contents

A. Ensure Occupational Health & Safety

Overview: This Competency Standard focuses on the skills required to ensure occupational health & safety in home appliances repair work, in accordance with the organization's approved guidelines and procedures. You will be expected to apply personal safety, tools and equipment safety, environmental safety and safety measures according to job. Your knowledge regarding ensure occupational health and safety, personal protective equipment, procedure, and job requirement work will be sufficient to provide you the basis for home appliance repair work.

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
A1. Apply personal safety measures	***You must be able to:*** P1. Use of general Personal Protective Equipment accordingly P2. Use of protective cloth P3. Remove hazardous jewelleries	***You need to know and understand:*** K1. Explain Personal Protective Equipment K2. Explain hazards associated to job	PPE equipment First Aid box Personal Protective equipment according to jobs
A2. Apply Tools and equipment safety measures	***You must be able to:*** P1. Identify tools according to job P2. Check tools condition P3. Use of tools according to job P4. Calibrate minor errors of measuring tools P5. Maintain tools according to job. P6. Ensure service tag according to job	***You need to know and understand…*** K1. Explain proper use of tools K2. Brief checking criteria of tool K3. Brief safety precaution of tools equipment K4. Describe safety hazards of equipment	Standard tool box

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
A3. Apply environment safety measures	***You must be able to…*** P1. Ensure worksite house keeping P2. Ensure adequate lighting and ventilation	***You need to know and understand…*** K1. Explain housekeeping of jobsite K2. Explain emergency rule statement	
A4. Apply safety measures according to job	***You must be able to:*** P1. Ensure work permit/ order P2. Use first aid kits P3. Use of fire extinguisher according to hazards P4. Ensure isolation of appliance	***You need to know and understand:*** K1. Explain work permit K2. Explain barricade of jobsite K3. Explain worksite hazards	

B. Perform Basic Installation of Home Appliances

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
B1. Use Installation manual	***You must be able to:*** P1. Prepare tools and equipment according to instruction manual P2. Unpack equipment accordingly P3. Inspect of equipment and accessories	***You need to know and understand:*** K1. Read equipment drawing K2. Brief instruction manual K3. Unpacking procedure of equipment K4. Explain installation procedure K5. Explain operational procedure	
B2. Install appliances according to manual	***You must be able to:*** P1. Visit the location of installation of equipment P2. List tools for installation P3. Arrange human resources P4. Mark the location of equipment P5. Fix the foundation/ base frame according to job P6. Position the equipment P7. Attach accessories accordingly	***You need to know and understand:*** K1. Read equipment drawing K2. Explain alignment procedure K3. Explain installation procedure K4. Explain measuring units K5. Explain basic measuring procedure	
B3. Perform test run	***You must be able to:*** P1. Ensure proper connections of equipment P2. Check earth leakage of equipment P3. Perform leakage test accordingly P4. Check mains supply	***You need to know and understand:*** K1. Explain type of connections K2. Explain importance of earthling system K3. Explain earthing procedure K4. Brief leakage test	

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
	P5. Perform test run P6. Observe operating status of equipment accordingly	K5. Explain specification of equipment K6. Explain functionality of equipment	

C. Perform Repairing of Home Appliance

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
C1. Perform test run	***You must be able to:*** P1. Check short circuit P2. Connect to mains supply P3. Perform test run as described P4. Note parameters	***You need to know and understand:*** K1. Explain electrical circuits K2. Read instruction manual K3. Explain procedure of test run of appliances K4. Explain operating specification	Series board Test lamp Single phase test Clamp on meter Multi meter Insulation tester
C2. Dismantle appliance	***You must be able to:*** P1. Ensure complete isolation P2. Use standard tools according to job P3. Tag the wires of appliances accessories P4. Adopt proper method of dismantling	***You need to know and understand:*** K1. Read instruction manual K2. Identify different tools K3. Explain procedure of dismantling of appliances K4. Explain wire tagging system	Screw driver set (Star set) Pliers set (combination, cutter, long nose, lock opener,) Cramping tools set Ale key set Retch wrench set Ring spanner set Open spanner set Hacksaw mini Hacksaw with blade Hammer set (400g) Rubber hammer File set Puller set Torque screw driver set De-Soldering gun Soldering iron (100w) Electrician knife Multi meter Single phase tester

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
C3. Diagnose fault of appliances	***You must be able to:*** P1. Inspect physical condition P2. Check electrical parts of appliance P3. Check mechanical parts P4. Check control module P5. Check magnetron P6. Check rectifier of magnetron P7. Check front penal P8. Tag faulty component/ parts	***You need to know and understand:*** K1. Explain working principle of appliances K2. Describe functionality of appliances (specification) K3. Describe physical parts of appliances K4. Explain testing procedure of parts K5. Explain electrical circuits and components K6. Explain block diagram	Series board Test lamp Single phase test Clamp on meter Multi meter Insulation tester
C4. Repair of washing machine	***You must be able to:*** P1. Fix rotor set P2. Fix mechanical fault P3. Fix electrical fault P4. Adjust control accessories P5. Align accessories P6. Fix front penal P7. Fix control module P8. Fix leakages P9. Demonstrate test run	***You need to know and understand:*** K1. Explain wash phenomena K2. Explain method of mechanical fixing fault K3. Explain method of electrical fixing fault K4. Explain adjustment of accessories	

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
C5. Repair of microwave	***You must be able to:*** P1. Fix safety fuse P2. Fix mechanical fault P3. Fix electrical fault P4. Adjust control accessories P5. Align accessories P6. Fix control module P7. Fix magnetron P8. Demonstrate test run	***You need to know and understand:*** K1. Explain working principle of magnetron K2. Explain heating process of microwave K3. Explain safety precaution of high voltage accessories K4. Explain method of mechanical fixing fault K5. Explain method of electrical fixing fault K6. Explain adjustment of accessories K7. Explain thermostat device K8. Explain rectification	
C6. Repair electrical Iron	***You must be able to:*** P1. Fix de-scaling of surface P2. Fix nozzles P3. Fix thermostat P4. Fix electrical fault P5. Adjust control accessories P6. Demonstrate test run	***You need to know and understand:*** K1. Explain working principle of Iron K2. Explain heating process of Iron K3. Explain de-scaling process K4. Explain safety precaution of high temperature/ voltage accessories K5. Explain method of mechanical fixing fault K6. Explain method of electrical fixing fault K7. Explain adjustment of accessories K8. Explain thermostat device	

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
C7. Repair of vacuum cleaner	***You must be able to:*** P1. Clean filter P2. Fix housing P3. Fix electrical fault P4. Adjust control accessories P5. Demonstrate test run	***You need to know and understand:*** K1. Explain working principle of vacuum cleaner K2. Explain method of mechanical fault fixing K3. Explain method of electrical fault fixing K4. Explain adjustment of accessories K5. Explain speed control process	Micron gauge Tachometer
C8. Repair of fans	***You must be able to:*** P1. Fix motor bushes P2. Perform lubrication P3. Fix mechanical faults P4. Align fan blade P5. Align parts and accessories P6. Fix electrical fault P7. Fix control parts P8. Adjust control accessories P9. Demonstrate test run	***You need to know and understand:*** K1. Explain working principle of motor K2. Explain method of mechanical fault fixing K3. Explain method of electrical fault fixing K4. Explain adjustment of accessories	
C9. Repair of emergency light	***You must be able to:*** P1. Fix rectification section P2. Fix switching section P3. Fix output section P4. Fix PCB P5. Fix electrical fault P6. Fix control module P7. Demonstrate test run	***You need to know and understand:*** K1. Explain emergency light working procedure K2. Explain batteries K3. Explain rectification K4. Read circuit diagram K5. Explain diode, LEDs, PCB K6. Explain transistor basics	

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
		K7. Explain testing procedure of electronics components	
C10. Repair of toaster	***You must be able to:*** P1. Fix thermostat P2. Fix spring P3. Fix mechanical faults P4. Align parts and accessories P5. Fix electrical fault P6. Fix control parts P7. Adjust control accessories P8. Demonstrate test run	***You need to know and understand:*** K1. Explain working principle of toaster K2. Explain safety precautions of toaster K3. Explain method of mechanical fault fixing K4. Explain method of electrical fault fixing K5. Explain adjustment of accessories	
C11. Repair of kitchen appliances	***You must be able to:*** P1. Fix carbon brushes P2. Fix leakage seals P3. Fix armature bushes P4. Fix mechanical fault P5. Fix electrical fault P6. Adjust control accessories P7. Align accessories P8. Fix front penal P9. Demonstrate test run	***You need to know and understand:*** K1. Explain working principle of motor K2. Explain method of mechanical fixing fault K3. Explain method of electrical fixing fault K4. Explain adjustment of accessories	
C12. Assemble appliance	***You must be able to:*** P1. Ensure standard tools according to job P2. Make internal connections	***You need to know and understand:*** K1. Describe Identification of different tools K2. Explain Usage of different tools &	

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
	P3. Perform proper method of assembling P4. Check physical condition of appliances P5. Perform leakage test P6. Check mains supply P7. Perform test run P8. Demonstrate appliances	equipment K3. Explain internal wiring diagram K4. Explain procedure of assembling K5. Explain procedure of test run K6. Explain demonstration of appliances	

D. Perform Replacement Components of Home Appliances

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
D1. Identify faulty component	***You must be able to:*** P1. Ensure availability of parts accordingly P2. Prepare request of parts P3. Inspect parts physically P4. Inspect parts functionality	***You need to know and understand:*** K1. Explain specification of parts K2. Explain functionality of parts K3. Explain store requisition procedure K4. Explain checking procedure of parts	
D2. Replace electrical components	***You must be able to:*** P1. Remove faulty component P2. Install new component P3. Check connections P4. Perform Insulation of connection	***You need to know and understand:*** K1. Explain electrical circuits K2. Explain electrical joints/ connections K3. Explain insulation procedure K4. Describe procedure of replacement	
D3. Replace mechanical parts	***You must be able to:*** P1. Remove faulty component P2. Install new component P3. Adjust new component P4. Perform lubrication accordingly	***You need to know and understand:*** K1. Describe procedure of replacement K2. Explain adjustment procedure K3. Explain lubrication procedure	
D4. Replace module	***You must be able to:*** P1. Remove faulty module P2. Install new module P3. Adjust new module P4. Check functionality of module	***You need to know and understand:*** K4. Describe procedure of replacement K5. Explain adjustment procedure K6. Explain function of module operation	

E. Perform Preventive Maintenance

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
D1. Inspect equipment	***You must be able to:*** P1. Inspect physical condition P2. Check electrical components P3. Check mechanical components P4. Fill checklist for preventive maintenance	***You need to know and understand:*** K1. Explain preventive maintenance schedule K2. Explain specification of parts K3. Explain functionality of parts K4. Explain component life cycle K5. Explain maintenance parameters of parts	
D2. Clean equipment	***You must be able to:*** P1. Arrange cleaning agent P2. Clean physical component P3. Clean filters P4. Clean electrical components/ connections	***You need to know and understand:*** K1. Explain cleaning schedule K2. Explain functionality of parts K3. Explain component life cycle K4. Explain cleaning parameters of parts	
D3. Lubrication mechanical parts	***You must be able to:*** P1. Arrange lubrication agent P2. Clean moving parts P3. Apply lubrication accordingly	***You need to know and understand:*** K1. Explain lubrication schedule K2. Explain type of lubrication K3. Explain lubricants life cycle K4. Explain procedure of lubrication process	
D4. Align equipment	***You must be able to:*** P1. Arrange alignment tools and equipment	***You need to know and understand:*** K1. Describe aligning tools K2. Explain procedure of aligning	

Competency Unit	Performance Criteria	Knowledge and Understanding	Tools & Equipment
	P2. Perform alignment of components P3. Check noise level	K3. Explain basic principles of alignment K4. Brief noise level checking procedure	
D5. Ensure parts life cycle	***You must be able to:*** P1. Check output ratio P2. Check physical condition	***You need to know and understand:*** K1. Explain preventive maintenance schedule K2. Explain specification of parts K3. Explain functionality of parts K4. Explain component life cycle K5. Explain maintenance parameters of parts	
D6. Demonstrate equipment	***You must be able to:*** P1. Arrange power source P2. Attach accessories accordingly P3. Perform test run P4. Demonstrate accordingly	***You need to know and understand:*** K1. Explain functionality of parts K2. Brief demonstration procedure of equipment	

Personal Protective Equipment (PPEs)

S.No.	Hand Tools	Quantity
1	Coveralls	
2	Safety helmet	
3	Hand gloves	
4	Ear plug (Ear protection)	
5	Safety goggles	
6	Safety shoes	
7	Safety face shield	
8	Splash goggles	
9	Full face gas mask	
10	Apron (Acid suit)	
11	Breathing apparatus	
12	Dust mask	

List of tools and equipment

S.No.	Hand Tools	Quantity
1	Combination spanner set	
2	Allen key set	
3	Hammer	
4	Files set	
5	Screw driver set	
6	Combination plier	
7	Nose plier	
8	Crow bar	
9	Hacksaw	
10	socket set	
11	Punch set	
12	Number punch	
13	Impact wrench	
14	Pipe wrench	
15	Adjustable wrench	
16	Chain wrench	
17	Circlip plier	
18	Inspection mirror	
19	Packing puller	
20	Measuring tape	
21	Scriber	
22	Clipper set	
23	Gauges (filler, universal, thread, angular, radius, depth, height, slip, bore, telescope, go /not go,	
24	Dial indicator	
25	Micrometer	
26	Vernier clipper	
27	Vibration meter	
28	Stethoscope	
29	Laser distance meter	
30	Tachometer	
31	Theodolite	

32	Temperature gun (laser)	
33	dB meter	
34	Pullers set	
35	Bolt extractor	

Documents, policies and guidelines

Kinds of seals and packing	Combination Spanner set
Type of Lubricating oils and greases	
Types of bearing	
Types of coupling	
Type of gears	
Types of valves	

List of consumable material

S.No.	Consumable Material	Quantity
1	Cotton waste	
2	Anti-seized compound	
3	Anti-corrosion spray	
4	Lapping paste (Amery paste)	
5	Emery paper	
6	Grinding disk	
7	Cutting disk	
8	Lapping stone	
9	Cotton gloves	
10	Silicon	
11	Teflon tape	
12	Wire brush	
13	Painting brush	
14	Disposable coverall	
15	Lock tight	
16	Emery flower wheel	
17	Alignment shims	
18	Grease	
19	Kerosene oil	

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