

## Trade HVACR

Title A: follow Workshop Practice			
Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
A1. Apply workshop safety measures	<p>He will be able to:</p> <p>P1. Use of first aid box            P2. Wear the personal protective equipment            P3. Adjust the personal protective equipment            P4. Maintain personal protective equipment            P5. Apply following safety measures in a workshop            i- ensure ventilation            ii- no inflammable material nearby            iii- availability of fire extinguishers            iv- secure electric connections            v- ensure earthing            vi- no light reflection            P6. Proper housekeeping</p>	<p>He will be able to:</p> <p>K1. Explain importance of first aid box in the workshop            K2. Lists PPE              K3. Importance of safety measures in the workshop              K4. Describes housekeeping</p>	<p>First Aid box, fire extinguisher, lighting system, personal protective equipments, Tool box</p>
A2. Prepare Copper Pipes for Joints	<p>He will be able to:</p> <p>P1. Cut the Copper tube            P2. Adjust the Copper tube in Anvil            P3. Flare the Copper Piece            P4. Swadge the Copper Piece</p>	<p>He will be able to:</p> <p>K1. Identify the cutting tools            K2. Knows the function of cutting tools            K3. Identify the swaging tools            K4. Knows the function of swaging tools            K5. Describes housekeeping</p>	<p>Chisels, Hacksaws, Files, Drills, Tube cutters, Pipe Cutters, Wire cutters, Tool Box</p>
A3. Prepare Copper Fittings	<p>He will be able to:</p> <p>P1. Cut the copper tubes            P2. Swag the copper tubes            P3. Bend the copper tubes              P4. Flare the copper tubes            P5. Weld the copper tubes</p>	<p>He will be able to:</p> <p>K1. Define the cutting method            K2. Knows the swaging method            K3. Describe the use of bending tool according to bends            K4. Knows the swaging methods            K5. Describes soldering &amp; brazing</p>	<p>swaging tools, tube cutter, tube benders, flaring tools, oxyacetylene welding cylinders, tool box</p>

<b>Title B: Demonstrate the Fundamentals of Electricity</b>			
<b>Unit of Competency</b>	<b>Performance Criteria</b>	<b>Knowledge</b>	<b>Tools &amp; Equipment</b>
B1. Apply Basic Electricity	He will be able to:  P1. Prepare Series Circuit P2. Prepare Parallel Circuit P3. Prepare combination circuit	He will be able to:  K1. Explain Ohm's law K2. Define the series circuit K3. Define the parallel circuit	Combination Pliers, Wire Stripper, Wire Cutter, AVO meter, Tool box
B2. Prepare Circuits	He will be able to:  P1. Prepare Circuit of single lamp with Two switches P2. Prepare series parallel test board P3. Make tube light connection	He will be able to:  K1. Describes series circuit K2. Differentiate between series circuit and parallel circuit K3. Explain the series & parallel circuit	Combination Pliers, Wire Stripper, Wire Cutter, AVO meter, Tool box
B3. Use of Meters	He will be able to:  P1. Operate the volt, Amp & Watt meter P2. Operate the Multimeter (AVO meter) P3. Operate the Clamp-On meter	He will be able to:  K1. Define the volt, Amp & Watt meter function K2. Define the Multimeter (AVO meter) K3. Describes the Clamp-On meter	Volt meter, Ampere meter, Watt meter, Multimeter (AVO meter), Clamp-On meter
B4. Prepare Electric Wiring Circuits	He will be able to:  P1. Prepare electric wiring circuit of refrigerators P2. Prepare electric wiring circuit of water cooler P3. Prepare electric wiring circuit of Deep Freezer P4. Prepare electric wiring circuit of Air-Conditioners	He will be able to:  K1. Define the electric wiring of refrigerators K2. Define the electric wiring of water cooler K3. Describes the electric wiring of Deep Freezer K3. Describes the electric wiring of Air-Conditioners	Deep Freezer, Refrigerators, Water cooler, Air-Conditioners, Multimeter (AVO meter), Clamp-On meter, Tool box

<b>Title C: Apply Servicing</b>			
<b>Unit of Competency</b>	<b>Performance Criteria</b>	<b>Knowledge</b>	<b>Tools &amp; Equipment</b>
C1. Perform Overhauling of domestic compressors	He will be able to: P1. Prepares gaskit of compressors P2. Adjust the air gap between Rotar and Stator P3. Check the compressor and motor terminals	He will be able to: K1. Define the gaskit material K2. Define the compressor internal parts K3. Define the resistance	Combination Pliers, Scissors, hammer, Feeler gauge, AVO meter, Tool box
C2. Preform Fault Finding in refrigeration Electric Parts	He will be able to: P1. Check the relays P2. Check the overload P3. Check the thermostat P4. Check the capacitors P5. Check the pressure switches	He will be able to: K1. Describe Relay and its function K2. Describe Overload and its function K3. Describe Thermostat and its function K4. Describe Capacitors and its function K5. Define Pressure switch and its function	Combination Pliers, Wire Stripper, Wire Cutter, AVO meter, Tool box

<b>Title D: Apply fundamentals of refrigeration</b>			
<b>Unit of Competency</b>	<b>Performance Criteria</b>	<b>Knowledge</b>	<b>Tools &amp; Equipment</b>
D1. Use of refrigeration Accessories	He will be able to:  P1. Install refrigerant control P2. Operate defrost timer P3. Apply Tachometer P4. Apply Megger	He will be able to:  K1. Define refrigerant control function K2. Explain the function of defrost timer K3. Know the function of tachometer K4. Describe megger and its uses	Refrigerant Control, defrost timer, Tachometer, Megger, Tool box
D2. Pump down the system	He will be able to:  P1. Install pressure gauges P2. Operates Shut of valves P3. Perform pump down procedure	He will be able to:  K1. Define Bourdon tube gauges K2. Explain the function of Shut of valves K3. Describe the pump down procedure	Gauge manifold, Allen keys, Adjustable screw wrenches, clamp-on meter, Tool box
D3. Connect the parts and accessories of Refrigeration Cycle	He will be able to:  P1. Install refrigeration cycle parts P2. Install refrigeration accessories P3. Perform recovery of refrigerant	He will be able to:  K1. Define different parts of refrigeration cycle K2. Describe different refrigerating accessories K3. Know the function of recovery unit	Refrigeration tool kit, gauge manifold, recovery unit

<b>Title E: Perform Gas Charging &amp; Trouble shooting</b>			
<b>Unit of Competency</b>	<b>Performance Criteria</b>	<b>Knowledge</b>	<b>Tools &amp; Equipment</b>
E1. Perform Vacuuming, leak testing and gas charging	<p>He will be able to:</p> <p>P1. Operate Vacuum pump  P2. Operate Pressure pump  P3. Apply Leak testing method  P4. Perform gas charging</p>	<p>He will be able to:</p> <p>K1. Define Vacuum and its units  K2. Explain the limitations of pressure  K3. Know the methods of leak testing  K4. Describe the procedures of gas charging</p>	<p>Refrigerator/ Air conditioner, Gauge manifold, Vacuum pump, Pressure pump, leak detector, Tool box, refrigerant cylinder, gas welding set</p>
E2. Perform trouble shooting	<p>He will be able to:</p> <p>P1. Diagnose the faults in Refrigeration units  P2. Repair the refrigeration units  P3. Diagnose the faults in Air conditioning units  P4. Repair the Air conditioning units</p>	<p>He will be able to:</p> <p>K1. Define the mechanical refrigeration cycle  K2. Explain the remedial procedures of refrigeration units  K3. Describe the air condition parts and their functions  K4. Explain the remedial procedures of Air conditioning units</p>	<p>Gauge manifold, Vacuum pump, Pressure pump, leak detector, Tool box, refrigerant cylinder, gas welding set</p>