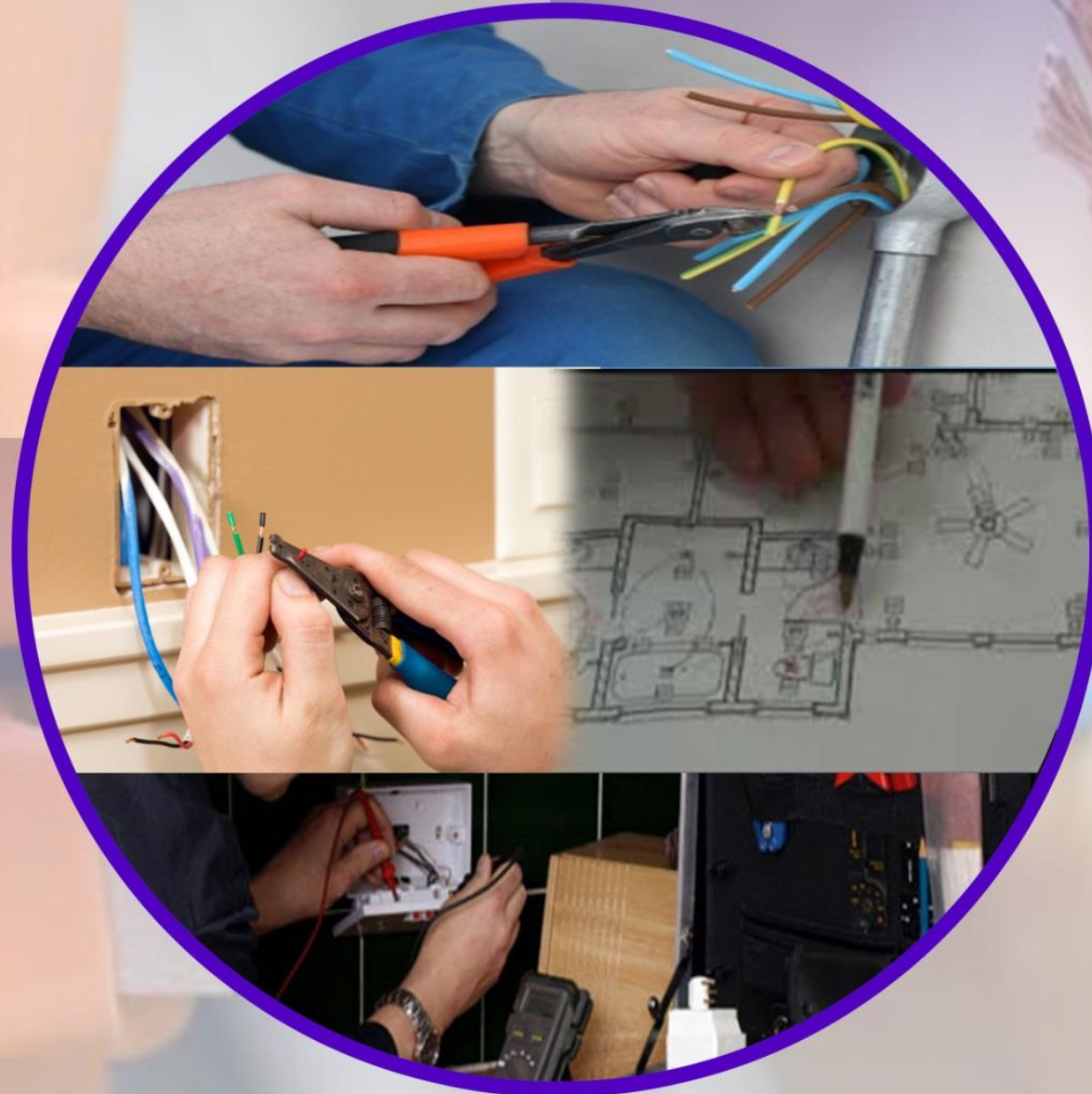


# National Vocational Certificate Level 2 in Construction Technology (General Electrician)



Competency Standards

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## Title A: ENSURE PERSONAL SAFETY

**Overview:** This competency standard identifies the basic knowledge and skills related to Personal protective equipment (PPE) including insulated gloves, Use of gloves, insulated shoes and mat and switching off of the main supply.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>A1:</b> <b>Wear insulated gloves and shoes.</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Demonstrate knowledge about insulated gloves.</p> <p><b>P2.</b> Demonstrate knowledge about insulated shoes.</p> <p><b>P3.</b> Demonstrate wearing of safety gloves</p> <p><b>P4.</b> Demonstrate wearing of safety shoes</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1.</b> Explain various types of safety gloves i.e. High tension line and low tension line.</p> <p><b>K2.</b> Importance of insulation</p> <p><b>K3.</b> Limitation of insulation</p>
<p><b>A2:</b> <b>Use of safety gloves</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Select the appropriate safety gloves</p> <p><b>P2.</b> Use of gloves by handling different equipment.</p> <p><b>P3.</b> Store after the use of safety gloves at appropriate location.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1.</b> Difference between un-useable and useable safety gloves</p> <p><b>K2.</b> Different uses of safety gloves.</p> <p><b>K3.</b> OHS precautions when using safety gloves</p> <p><b>K4.</b> Issues which may arise with use damaged safety gloves</p>

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>A3:</b>  <b>Use insulated electrical tools / kit</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P4.</b> Select the appropriate tools / kit</p> <p><b>P5.</b> Use insulated tools / kit by handling different tools.</p> <p><b>P6.</b> Store after the use of tools and kit at appropriate location.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1.</b> Difference between insulated and conductive tools</p> <p><b>K2.</b> Different uses of insulated tools.</p> <p><b>K3.</b> OHS precautions when using insulated tools</p> <p><b>K4.</b> Hazards of using unsafe tools</p>
<p><b>A4:</b>  <b>Use of safety mat at workplace</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P7.</b> Identify the safety mat at workplace</p> <p><b>P8.</b> Use of safety mat while handling different equipment.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K5.</b> Benefits of insulated safety mat</p> <p><b>K6.</b> Capacity of different insulated safety mats in accordance to workplace.</p>

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>A5:</b> <b>Assure main switch off</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P9.</b> Identify the location of main switch</p> <p><b>P10.</b> Turn off the main switch.</p> <p><b>P11.</b> Tag off / Log off the main switch</p> <p><b>P12.</b> Assure with tester that supply is powered off.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K7.</b> Different types of main switches</p> <p><b>K8.</b> OHS precautions when switching off the main supply</p> <p><b>K9.</b> Use of tester</p> <p><b>K10.</b> Issues which may arise with not switching off the main supply</p>

## Title B: INTERPRET ELECTRICAL DRAWING OF BUILDING FOR FIXING PVC PIPES

**Overview:** The competency standard is about interpretation of electrical drawing of a building to identify electrical points and utilized the knowledge of PVC pipes and its fixing techniques.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>B1:</b> Collect job documentation (e.g. drawing, map, history)</p>	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Identify the area / person to collect the job documentation from.</p> <p><b>P2.</b> Collect the appropriate job document.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1.</b> Various types of job documentation (e.g. drawing, map, history).</p> <p><b>K2.</b> Electrical symbols used in drawing/ building map.</p>
<p><b>B2:</b> Locate electrical points as per drawing</p>	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Study the drawing carefully</p> <p><b>P2.</b> Identify location of different types of electrical points as per job document.</p> <p><b>P3.</b> Verify location of different types of electrical points as per job document.</p> <p><b>P4.</b> Apply tags to the different electrical points.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1.</b> Different types of drawing</p> <p><b>K2.</b> Symbols for different electrical points</p> <p><b>K3.</b> Tagging techniques.</p>

Competency Unit	Performance Criteria	Knowledge and Understanding
<b>B3:</b> <b>Perform measurement of PVC pipes of different sizes</b>	<b>Trainee will be able to:</b> <b>P1.</b> Select proper measuring tools. <b>P2.</b> Use proper measuring unit. <b>P3.</b> Perform measuring of PVC pipe as per requirement.	<b>Trainee must know and understand:</b> <b>K1.</b> Types of measuring tool <b>K2.</b> Types of measuring units <b>K3.</b> Measuring techniques
<b>B4:</b> <b>Fix joints with PVC solution</b>	<b>Trainee will be able to:</b> <b>P1.</b> Select proper PVC joining solution. <b>P2.</b> Apply PVC solution as per standard. <b>P2.</b> Check the joint strength.	<b>Trainee must know and understand:</b> <b>K1.</b> Know the types of jointing solutions. <b>K2.</b> OHS safety precautions using solution. <b>K3.</b> Material specification.
<b>B5:</b> <b>Perform fixing of all pipes with mild steel wire</b>	<b>Trainee will be able to:</b> <b>P1.</b> Lay pipe as per drawing <b>P2.</b> Fix pipe with mild steel wire. <b>P3.</b> Check fixing of pipe in compliance with job document.	<b>Trainee must know and understand:</b> <b>K1.</b> The laying and fixing techniques. <b>K2.</b> Jointing techniques using steel wire.



<p><b>B6:</b>  <b>Check all fan box and junction box</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Check all fan and light boxes laid out as per drawing.</p> <p><b>P2.</b> Check all junction boxes laid out as per drawing.</p> <p><b>P3.</b> Perform necessary adjustments.</p> <p><b>P4.</b> Clear blockage, if required.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1.</b> Checking procedure for fan, light and junction boxes</p> <p><b>K2.</b> Adjustment methods of point joints and junctions</p> <p><b>K3.</b> Procedure of clearing blockage in fan and junction boxes.</p>
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## Title C: PERFORM MEASUREMENT OF PLAN WIRING

**Overview:** The competency standard identifies knowledge and skills required to perform measurements of rooms; distribution box, light plug, main circuit to switch board, TV, telephone, intercom, internet cable, wall lights and levelling of switch board, chiselling with wall cutter and fixing of PVC pipes with box etc.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>C1:</b> Perform measurement of rooms</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1.</b> Identify the wiring points as per drawing</p> <p><b>P2.</b> Mark the wiring points as per drawing.</p> <p><b>P3.</b> Select the require measuring tool.</p> <p><b>P4.</b> Measurement of room.</p> <p><b>P5.</b> Record the measurements in appropriate document.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1:</b> Measuring units.</p> <p><b>K2:</b> Measuring tools.</p> <p><b>K3:</b> Basic calculation methods.</p>
<p><b>C2:</b> Perform measurement of distribution board to switch board</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1.</b> Identify the wiring route from distribution board to switch board as per electrical drawing.</p> <p><b>P2.</b> Measure the distance from distribution board to switch board.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1:</b> Measuring units.</p> <p><b>K2:</b> Measuring tools.</p> <p><b>K3:</b> Basic calculation methods</p>

	<p><b>P3.</b> Record the measurements in appropriate document.</p>	
<p><b>C3:</b> Perform measurement of power plugs for AC</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1.</b> Identify the wiring route from distribution board to AC power plugs.</p> <p><b>P2.</b> Measure the distance from distribution board to AC power plug</p> <p><b>P3.</b> Record the measurements in appropriate document.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1:</b> Measuring units.</p> <p><b>K2:</b> Measuring tools.</p> <p><b>K3:</b> Basic calculation methods</p>
<p><b>C4:</b> Perform measurement of light plug</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1.</b> Identify the wiring route from switch board to light plugs.</p> <p><b>P2.</b> Measure the distance from distribution board to switch board to light plugs.</p> <p><b>P3.</b> Record the measurements in appropriate document.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1:</b> Measuring units.</p> <p><b>K2:</b> Measuring tools.</p> <p><b>K3:</b> Basic calculation methods</p>
<p><b>C5:</b> Perform measurement of main circuit to distribution board</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1.</b> Identify the wiring route from energy meter to distribution board.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1:</b> Measuring units.</p> <p><b>K2:</b> Measuring tools.</p>

	<p><b>P2.</b> Measure the distance from energy meter to distribution board.</p> <p><b>P3.</b> Record the measurements in appropriate document.</p>	<p><b>K3:</b> Basic calculation methods</p>
<p><b>C6:</b> Perform measurement of TV, telephone, intercom, internet cable from main to junction board</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1.</b> Identify the wiring route of TV, telephone, intercom, internet cable from main to junction board</p> <p><b>P2.</b> Measure the distance of TV, telephone, intercom, internet cable from main to junction board.</p> <p><b>P3.</b> Record the measurements in appropriate document.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1:</b> Measuring units.</p> <p><b>K2:</b> Measuring tools.</p> <p><b>K3:</b> Basic calculation methods</p>
<p><b>C7:</b> Perform levelling of switch boards (AC light, Light plug, Tv)</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1.</b> Select levelling tools according to job requirement.</p> <p><b>P2.</b> Perform levelling of switch boards ( TV, telephone, intercom, internet connection )</p> <p><b>P3.</b> Mark the levels.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1:</b> Measuring units.</p> <p><b>K2:</b> Levelling tools.</p> <p><b>K3:</b> Levelling techniques.</p> <p><b>K4:</b> Basic calculation methods</p>

<p><b>C8:</b> Perform levelling of room wall lights</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1.</b> Select levelling tools according to job requirement.</p> <p><b>P2.</b> Perform levelling of wall lights</p> <p><b>P3.</b> Mark the levels.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1:</b> Measuring units.</p> <p><b>K2:</b> Levelling tools.</p> <p><b>K3:</b> Levelling techniques.</p> <p><b>K4:</b> Basic calculation methods</p>
<p><b>C9:</b> Perform chiselling with wall cutter</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1.</b> Select the appropriate size of wall cutter.</p> <p><b>P2.</b> Perform chiselling at the marked points.</p> <p><b>P3.</b> Check the levels of chiselled points.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1:</b> Use and types of wall cutter</p> <p><b>K2:</b> Chiselling techniques</p>
<p><b>C10:</b> Perform fixing of PVC pipes/switch box</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1.</b> Identify the appropriate PVC pipe according to required sizes.</p> <p><b>P2.</b> Fix the pipe / switch boxes at their desired locations.</p> <p><b>P3.</b> Check the strength of PVC pipe installation.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1:</b> fixing techniques for PVC pipe / switch boxes</p>

## Title D: CALCULATE ALL ELECTRICAL APPLIANCES LOAD

**Overview:** The competency standard identifies the knowledge and skills needed to calculate electrical load for selection of cables & estimation of quantity required for electrical items.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>D1:</b> <b>Calculate load of wiring</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P1-</b> Enlist the equipment/appliances</p> <p><b>P2-</b> estimation load of wiring against each item.</p> <p><b>P3-</b> Perform Simple Calculation</p> <p><b>P4-</b> Record estimated load</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1-</b> Power rating of equipments/appliances</p> <p><b>K2-</b> Units of current voltage and power</p> <p><b>K3-</b> Types of circuit (Parallel, series)</p> <p><b>K4-</b> basic mathematical calculations</p> <p><b>K5-</b> Circuit Tolerance</p> <p><b>K6-</b> Ohm's Law</p> <p><b>K7-</b> Conversion of different electrical quantities (power, current and voltage)</p>
<p><b>D2:</b> <b>Selection of cables according to room load</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P1-</b> Interpret standard Specification Table of Cables/Wires.</p> <p><b>P2-</b> Estimate the required room Load.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1-</b> Read the Standard specification table for cable/wire</p> <p><b>K2-</b> Describe Load calculation</p> <p><b>K3-</b> Types of Cables/Wires</p>

Competency Unit	Performance Criteria	Knowledge and Understanding
	<p><b>P3-</b>Select Cable size according to estimated load</p> <p><b>P4-</b>check the quality of cables.( Silver / Copper )</p> <p><b>P5-</b>check the size of cables.( under gauge )</p> <p><b>P6-</b>check the insulation of cables.</p>	<p><b>K4-</b> Trademarks of cable manufacturing companies like ,New AGE, Pakistan, Dawn, GM e.t.c</p> <p><b>K5-</b> basic mathematical calculations</p> <p><b>K6-</b> Conductor, Insulator and semi-Conductor</p>
<p><b>D3:</b> <b>Selection of size of cables according to appliances</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P1-</b> Interpret standard Specification Table of Cables/Wires</p> <p><b>P2-</b> identify the required Load of appliances.</p> <p><b>P3-</b> Select Cable size according to estimated load</p> <p><b>P4-</b>check the quality of cables.( Silver / Copper )</p> <p><b>P5-</b>check the size of cables.( under gauge )</p> <p><b>P6-</b>check the insulation of cables.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1-</b> Read the Standard specification table for cable/wire</p> <p><b>K2-</b> Describe Load calculation</p> <p><b>K3-</b> Types of Cables/Wires</p> <p><b>K4-</b> Trademarks of cable manufacturing companies like, New AGE, Pakistan, Dawn, GM e.t.c</p>

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>D4: Prepare estimates of required electrical items</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P1-</b> Interpret Quantity of Materials as per Drawing</p> <p><b>P2-</b> Enlist Quantity of Material with Specification</p> <p><b>P3-</b> Prepare Estimate of required Items and accessories.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1-</b> Various types of Symbol of Equipments , Material and appliances</p> <p><b>K2-</b> Types, specification and Trademark of material</p> <p><b>K3-</b> Techniques and procedure for preparing estimate of required material</p>



## Title E: USE OF ELECTRICAL CABLES/WIRE

**Overview:** The competency standard identifies the knowledge and skills required to install main distribution board, earthing, cables from sub circuit to branch circuit and till electrical appliances and test earthing, wiring joints and over all wiring etc.

Competency Unit	Performance Criteria	Knowledge and Understanding
<b>E1: Install main distribution board</b>	<b>Trainee must be able to:</b>  <b>P1-</b> Select Size of Distribution Board (DB) as per Requirement  <b>P2-</b> Install Distribution Box	<b>Trainee must know and understand:</b> <b>K1-</b> various sizes of distribution board <b>K2-</b> proper fitting of distribution board
<b>E2: Install earthing connections properly</b>	<b>Trainee must be able to:</b>  <b>P1-</b> Select Location for earthing  <b>P2-</b> Monitor digging of earth  <b>P3-</b> Select earthing material.  <b>P4-</b> select proper size of earthing cable and plate.  <b>P5-</b> Install Earthing system  <b>P6-</b> Connect earthing system with main distribution box	<b>Trainee must know and understand:</b>  <b>K1-</b> Earthing.  <b>K2-</b> Types of earthing materials and earthing components  <b>K3-</b> Techniques and procedure for digging and installation of earthing system  <b>K4-</b> Techniques and procedure of connecting earthing system with a main distribution box  <b>K5-</b> Various types of testing technique and procedure for earthing system

Competency Unit	Performance Criteria	Knowledge and Understanding
	<p><b>P7-</b> Perform earthing test</p>	
<p><b>E3:</b> Install cables from main circuit to sub circuit</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1-</b> Select Wires/Cables as per calculation according to colour code</p> <p><b>P2-</b> Inspect Wire</p> <p><b>P3-</b> Lay Wires</p> <p><b>P4-</b> Connect wires to the Switch Boards (Sub Boards)</p> <p><b>P5-</b> Insulate Joints and Wires</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1-</b> Wires/Cables Specification, Types and Trademark</p> <p><b>K2-</b>Types of Damages happens to wire</p> <p><b>K3-</b> Use of mager</p> <p><b>K4-</b> Use of multi meter</p> <p><b>K5-</b> Use of basic wiring tools( steel wire pulling )</p> <p><b>K6-</b> Types of electrical wiring joints</p> <p><b>K7-</b> Types of Insulating Material</p>
<p><b>E4:</b> Install cables from sub circuit to branch circuit</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1-</b> Select The required Tools for performing connection</p> <p><b>P2-</b> Perform Connections in-line with the cables/ wires colour coding</p> <p><b>P3-</b> Wire the switch board</p> <p><b>P4-</b> Insulate joints</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1-</b> Types of tools/material used for connections</p> <p><b>K2-</b> The colour codes standard</p> <p><b>K3-</b> Technique and procedure for connecting wire with boards</p>

Competency Unit	Performance Criteria	Knowledge and Understanding
		<p><b>K4-</b> Types of joints</p> <p><b>K5-</b> Types of insulating material</p>
<p><b>E5:</b>  <b>Install cables from branch circuit to electrical appliance</b></p>	<p><b>Trainee must be able to:</b></p> <p><b>P1-</b> Select The required Tools for performing connection</p> <p><b>P2-</b> Perform Connections in-line with the cables/ wires colour coding</p> <p><b>P3-</b> check wiring joints</p> <p><b>P4-</b> Insulate joints</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1-</b> Types of tools/material used for connections</p> <p><b>K2-</b> The colour codes standard</p> <p><b>K3-</b> Technique and procedure for connecting wire with boards</p> <p><b>K4-</b> Types of joints</p> <p><b>K5-</b> Types of insulating material</p> <p><b>K6-</b> types of electrical circuits (series, parallel and series parallel )</p>
<p><b>E6:</b>  <b>Check all wiring joints</b></p>	<p><b>Trainee must be able to:</b></p> <p><b>P1-</b>inspect the joints</p> <p><b>P2-</b> strength the joints if required.</p> <p><b>P3-</b> Insulate joints</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1-</b> Types of tools/material used for connections</p> <p><b>K2-</b> The colour codes standard</p> <p><b>K3-</b> Technique and procedure for connecting wire with boards</p>

Competency Unit	Performance Criteria	Knowledge and Understanding
		<p><b>K4-</b> Types of joints</p> <p><b>K5-</b> Types of insulating material</p> <p><b>K6-</b> types of electrical circuits (series, parallel and series parallel)</p>
<p><b>E7:</b> Check wiring and earth testing</p>	<p><b>Trainee must be able to:</b></p> <p><b>P1-</b> Select The required testing Tools/equipment</p> <p><b>P2-</b> Perform Physical Inspection of wiring/Cabling</p> <p><b>P3-</b> Perform Continuity Test and fix the problem accordingly</p> <p><b>P4-</b> Perform Insulation Test and fix the problem accordingly</p> <p><b>P5-</b> Perform Earth Test and fix the problem accordingly</p> <p><b>P6-</b> Install the appliances/equipments</p> <p><b>P7-</b> Connect main supply to the Distribution box</p> <p><b>P8-</b> Perform Appliances Functional Test</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1-</b> Types of Tools/equipment's</p> <p><b>K2-</b> Disadvantages of lose connection</p> <p><b>K3-</b> Techniques and procedure for performing Continuity, Insulation, earthing and appliance test.</p> <p><b>K4-</b> Installation Techniques and Procedure of appliances</p> <p><b>K5-</b> Types, specification of appliances</p>

## Title F: Perform Repair and Maintenance of Electrical Appliances.

**Overview:** The competency standard identifies the knowledge and skills required to diagnose faults, cause of faults and fix the problems of electrical appliance.

Competency Unit	Performance Criteria	Knowledge and Understanding
<b>F1: Trace fault of Wiring /Appliances</b>	<b>Trainee must be able to:</b>  <b>P1-</b> Select the required Tools and equipment for Tracing The Fault  <b>P2-</b> Perform Physical Inspection  <b>P3-</b> Check the Supply  <b>P4-</b> Trace the wiring fault  <b>P5-</b> Check the appliance  <b>P6-</b> Trace the fault	<b>Trainee must know and understand:</b>  <b>K1-</b> Types of tools  <b>K2-</b> Types of faults  <b>K3-</b> Types of Electrical circuit  <b>K4-</b> Types of Supply  <b>K5-</b> Techniques and procedure for Tracing faults
<b>F2: Remove Fault (wire cable /switch/circuit breaker)</b>	<b>Trainee must be able to:</b>  <b>P1-</b> Select required tools for removing the fault  <b>P2-</b> Repair Damaged part  <b>P4-</b> Check specification of the damaged part	<b>Trainee must know and understand:</b>  <b>K1-</b> Type of Tools  <b>K2-</b> Types of faults  <b>K3-</b> Types of Electrical circuit  <b>K4-</b> Types of Supply

Competency Unit	Performance Criteria	Knowledge and Understanding
	<p><b>P5-</b>Replace Damaged part as per specification</p> <p><b>P6-</b> Check Workability of replaced/Repaired parts</p>	<p><b>K5-</b> Techniques and procedure for Tracing faults</p> <p><b>K6-</b> About the market information about the rates, trade and substitute of appliance e.t.c</p>
<p><b>F3:</b> <b>Repair/Repace electrical appliances</b></p>	<p><b>Trainee must be able to:</b></p> <p><b>P1-</b>Diagnose the faults of appliances.</p> <p><b>P2-</b> Diagnose the cause of faults of appliances.</p> <p><b>P3-</b> Select required tools for removing the fault</p> <p><b>P4-</b> Repair Damaged part .</p> <p><b>P5-</b> Check specification of the damaged part</p> <p><b>P6-</b>Replace Damaged part as per specification</p> <p><b>P7-</b> Replace the appliances (Light Bulb, Belt etc.)</p> <p><b>P8-</b> Check Workability of replaced/Repaired parts/appliances</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1-</b>Types of faults</p> <p><b>K2-</b> Types of Electrical circuit</p> <p><b>K3-</b> Types of Supply</p> <p><b>K4-</b> Techniques and procedure for removing faults</p> <p><b>K5-</b> About the market information about the rates, trade and substitute of appliance e.t.c</p>

## Title G: Ensure Occupational Health and Safety

**Overview:** The competency standard identifies the knowledge, skills and training in the theories and practices of health safety and security precautions required for a safe working environment.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>G1 :</b>  <b>Meet workplace health safety and security requirements for a safe working environment</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Maintain a safe working environment and safe system to work.</p> <p><b>P2.</b> Use and maintain machinery, equipment, appliances and tools in a safe working condition.</p> <p><b>P3.</b> Make available information as necessary to ensure that everyone is safe from injury and risks to health</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1.</b> Requirements for a safe working environment</p> <p><b>K2.</b> Ergonomics suitable for the work environment</p> <p><b>K3.</b> Maintenance procedures for machinery, equipment, appliances, tools</p>
<p><b>G2 :</b>  <b>Follow workplace health, safety and security procedures</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Report hazardous situations, fatalities, injuries and illness.</p> <p><b>P2.</b> Control and minimise the risks to ensure that injury or illness is prevented.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1.</b> Hazard Identification processes</p> <p><b>K2.</b> Risk assessment and control processes</p> <p><b>K3.</b> Precautionary measures and their utilisation to prevent health damages.</p>

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>G3 :</b> <b>Maintain own safe work area.</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Demonstrate ability to handle cables related operations appropriately.</p> <p><b>P2.</b> Install electronic devices at a manageable distance as per industry requirements.</p> <p><b>P3.</b> Handle sharp implements or tools properly.</p> <p><b>P4.</b> Maintain safe distances between self and machinery, and machine-to-machine.</p> <p><b>P5.</b> Use appropriate accessories and tools .</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1.</b> Use and handling of electronic equipment</p> <p><b>K2.</b> Precautions to minimise electrical risks.</p>
<p><b>G4 :</b> <b>Deal with emergency situations.</b></p>	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Ensure inexperienced workers in the performance of any hazardous work receive the necessary supervision.</p> <p><b>P2.</b> Provide instructions to ensure that everyone is safe in emergency situations.</p> <p><b>P3.</b> Provide first aid if required.</p>	<p><b>Trainee must know and understand:</b></p> <p><b>K1.</b> Emergency situations and how to deal with it.</p> <p><b>K2.</b> Location of First Aid box</p> <p><b>K3.</b> Identify and locate trained First Aide responder</p>



## Title H: Develop Professionalism

**Overview:** The competency standard identifies the differences between professionalism and being professional. Being professional means ensuring appearance, manner, communication, interacting, attitudes, approach, skills, and openness to grow are developed. Professionalism is a combination of taught aspects, such as knowledge and skills, and learning gained through experience.

Competency Unit	Performance Criteria	Knowledge and Understanding
<b>H1 : Communicate with co-workers</b>	<b>Trainee will be able to:</b>  <b>P1.</b> Communicate within a department.  <b>P2.</b> Communication with other departments.  <b>P3.</b> Dealing with vendors.  <b>P4.</b> Interaction with other organisations.  <b>P5.</b> Using various media to communicate effectively.	<b>Trainee must know and understand:</b>  <b>K1.</b> Effectively communication within and without the organisation.  <b>K2.</b> How to deal with vendors and the other organisations.  <b>K3.</b> Appropriate use of electronic and relative media when required
<b>H2 : Manage Time</b>	<b>Trainee will be able to:</b>  <b>P1.</b> Manage time to complete the assigned work.  <b>P2.</b> Manage workload as per task.  <b>P3.</b> Check work regularly to ensure accuracy for given task.	<b>Trainee must know and understand:</b>  <b>K1.</b> Importance of managing time according to task priorities, involving management and co-workers

	<b>P4.</b> Handle time division with co-workers.	
<b>H3: Upgrade Skills</b>	<b>Trainee will be able to:</b> <b>P1.</b> Participate in skill tests <b>P2.</b> Attend seminars / workshops. <b>P3.</b> Participate in competitions time to time. <b>P4.</b> Perform market research. <b>P5.</b> Analyse upcoming market trends	<b>Trainee must know and understand:</b> <b>K1.</b> Importance of trends and market research to work role <b>K2.</b> Development of skill sets over time by way of seminars, workshops and competitions.
<b>H4: Keep the workplace clean</b>	<b>Trainee will be able to:</b> <b>P1.</b> Keep their workplace organised. <b>P2.</b> Ensure clean working environment.	<b>Trainee must know and understand:</b> <b>K1.</b> Requirements of a clean and organised workplace <b>K2.</b> Effective and efficient organisation of work area
<b>H5: Work in a team</b>	<b>Trainee will be able to:</b> <b>P1.</b> Show the good team skills. <b>P2.</b> Take an appropriate appearance. <b>P3.</b> Show comfort and tolerance. <b>P4.</b> Present and observe good work ethics.	<b>Trainee must know and understand:</b> <b>K1.</b> Importance of being a good team player <b>K2.</b> Workplace requirements for dress and appearance <b>K3.</b> Work ethics of the workplace

## List of Tools and Equipment

### List of Tools / Equipment / Machinery (For a class of 20 students)

Sr. No.	Name of Tools / Equipment	Quantity
1.	Wire stripper	5 Nos
2.	Screw Driver 4", 6", 8"	25 Nos each
3.	Neon phase tester light duty pocket size	25 Nos
4.	Insulated pliers with side cutter	20 Nos
5.	Insulated long nose pliers with side cutter	20 Nos
6.	Insulated wire cutter	20 Nos
7.	High insulation rubber hand gloves	20 Nos
8.	Knife	20 Nos
9.	Chisels 6", 12"	10 Nos each
10.	Hammers 200 gm.	20 Nos
11.	Hack saws	20 Nos
12.	Electric soldering iron 150 watt	10 Nos
13.	Philips screw driver No 1, 2, 3.	20 Nos each
14.	Measuring tap 3m	20 Nos
15.	Steel foot rule.	20 Nos

Sr. No.	Name of Tools / Equipment	Quantity
16.	Files (Flat) 250 x 1, 200 x 2	20 Nos each
17.	Files (Triangular) 150 x 2	20 Nos
18.	Files (Half round) 200 x 2	20 Nos
19.	Files (Round) 200 x 1	20 Nos
20.	Files (Raps cut) 150	20 Nos
21.	Bench Vice 5"	20 Nos
22.	Tri square 150 x 100 mm	20 Nos
23.	Vernier caliper 150 mm	20 Nos
24.	Center punch	20 Nos
25.	Hammer 500 gm	10 Nos
26.	Scriber	20 Nos
27.	Rubber hammer	10 Nos
28.	Vice clamps	20 Nos
29.	Insulation Remover 150 mm	20 Nos
30.	Bearing puller	2 Nos
31.	Farmer chisels 8".	10 Nos
32.	Wooden saw 300 mm	10 Nos
33.	Test boy	20 Nos
34.	Volt meter (Panel type 4" x 4") 0-300V-AC 50 HZ	10 Nos

Sr. No.	Name of Tools / Equipment	Quantity
35.	Volt meter (Panel type 4" x 4") 0-600V-AC 50 HZ	
36.	Ammeter (Panel type 4" x 4") 0-30-AC 50 HZ	20 Nos
37.	Multi-meter (Digital)	10 Nos
38.	Multi-meter (Analog)	06 Nos
39.	Tong tester	20 Nos
40.	Hand Electric drill machine with hammering 0-13 mm	6 Nos
41.	Pedestal drill machine	2 Nos
42.	Jigsaw machine portable	1 No
43.	Scissor 6"	5 Nos
44.	Single phase energy meter 220V /10-20A	5 Nos
45.	Three phase energy meter 30 A	5 Nos
46.	Dust brush / File brush	20 Nos each
47.	Magnetic Contactors 2 + 2 220 Volts / 10 A 50Hz	10 Nos.
48.	Single Phase Motor 220 Volts 50Hz ½ HP	5 Nos.
49.	Three Phase Motor 380 Volts 50Hz 2 HP	5 Nos.
50.	Push Button Single Way / Two Way / Three Way	20 Nos. Each
51.	Drum Switch ON / OFF, REV / FOR, Star / Delta	10 Nos. Each
52.	Overload Relay 0.5 – 3.0 Amp	20 Nos.
53.	Motor Protection Switch Three Phase	10 Nos.

Sr. No.	Name of Tools / Equipment	Quantity
54.	Earth Resistance Tester	5 Nos
55.	Oscilloscope 40 MHz	2 Nos
56.	Function Generator 5 MHz	2 Nos
57.	Variable Power Supply 0-24V, 5A	5 Nos
58.	Variac 440 3 phase	2 Nos
59.	RLC Tester	2 Nos
60.	UPS 1 kW	5 Nos
61.	Security Camera	2 Nos
62.	Computer System	2 Nos
63.	Adjustable ladder, 6 Ft	2 Nos
64.	Power factor meter	2 Nos

## List of consumables

- Notebooks
- CDs Rewriteable
- Photocopy Papers
- Ball pens
- Pencils
- Erasers
- Sharpeners
- Board Markers
- Plastic files
- Flip chart papers
- Pin-board pins
- Whiteboard
- Whiteboard Eraser
- Paper knives
- Glue sticks
- Paper clips
- Scissors
- Punching machines
- Patter Sheets
- Tracing Papers



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