DOMESTIC WIREMAN AND MOTOR INSTALLATION TECHNICIAN (WMIT)

Core Qualification File Syllabus

THEORY: (72 HOURS)

Unit-1: Safety: (8 hrs)

Safety Practices; Fires in electrical Circuits & Precautions, Fire Extinguishers & its Types, General Safety of Tools &equipment, Rescue of person who is in contact with live wire, Treat a person for electric shock/ injury

Unit-2: Classification of Electrical Engineering Materials: (4 hrs)

1. Classification of electrical materials, Properties of conducting materials, Name different conducting materials used for electrical engineering.
2. Different dielectric materials and Factors affecting dielectric strength.
3. General properties of insulating material, Name different insulating material s used for electrical purposes.
4. Introduction to Electronics: Familiarization of working with electronic components like resistors, Capacitor, Choke coil, Diode, Transistor.

Unit-3: Symbols, Diagram & Rules: (6 hrs)

1. Studies of diagram & Symbols used in basic Electrical Circuits, Wiring & installations
2. Colour Code of carbon Resistors, different types of capacitors available and their rating and use.

Unit 4: Different Tools and Equipment: (6 hrs)

1. Screw driver pliers, cutting pliers, nose pliers, hammer, hand drill, hacksaw, wooden saw, knife , chisel , files, wrench & spanner, pipe wrench, standard wire gauge, bench vice, pipe vices, conduit pipe cutters, micrometer, plumb bob, max puller , hand gloves blow lamp, Earthing rod with chain, test lamp, neon tester, Crimping Tools , Ammeter, Tungtester, volt meter, multimeter (A V O).
2. Soldering iron, DE soldering pump.

Unit 5: Different Types of Wires and Protective Devices: (6 hrs)

1. Types of wires, size of wire, Concept of gauge of wire, current carrying capacity, comparison between copper and aluminium wire, Choice of conductor material.
2. Different types of switches for electrical purposes.
3. Ordinary fuse, cartridge fuse, HRC fuse, cut out, Determination of Fuse size according to the load of circuit and its location, Use of Miniature circuit breaker (MCB), Earth leakage circuit breaker (ELCB).

Unit-5: Different Wiring System: (10 hrs)

1. Cleat wiring, PVC casing and capping wiring, Concealed conduit and Surface conduit wiring.
2. Comparative discussion of above types of wiring and selection of specific type.

Unit-6: Domestic Wiring Installation: (6 hrs)

1. Wiring accessories, Main switch, Distribution board, Junction box, Switch board.
2. Sub circuit, Positioning of wiring accessories, Simple light & Fan circuit, Power circuit , Staircase lighting circuits, Electrical wiring installation in buildings.
3. Estimation of wiring materials. (For domestic wiring up to two rooms)

Unit-7: Testing of Installation: (6 hrs)

1. Insulation resistance test between installation & earth, Insulation resistance test between conductors.
2. Polarity test of single pole switch, Earth continuity test, Earth resistance test.
3. Use of test lamp and meggar in fault location

Unit-8: Illumination: (10 hrs)

1. Laws of illumination, Luminous intensity, Illuminance, Luminous flux.
2. Factors affecting good illumination, Computation of illuminance at any point on working plane.
3. Different lighting schemes, Connection diagram of sodium vapour lamp & Mercury discharge lamp.

Unit-9: Electrical Installation of Motors: (8 hrs)

1. I.E. Rules for installation of power circuit, Guidelines for power circuit wiring in small industries.
2. Concept of three phase supply, Phase voltage, line voltage, testing of three phase voltage with test lamp and multimeter.
3. Wiring diagram and single line diagram for A.C. motor installation, Materials required for single phase & 3-phase A.C. motor (upto 5 HP) installation.

Unit-10: Electrical Earthing: (6 hrs)

1. Leakage current, Cause of earthing. Resistance of earth conductor.
2. Pipe earthing, Plate earthing.

PRACTICAL/PROJECT : (96 HOURS):

1. To make a chart of different fire extinguishers, and their use
2. To make a chart showing Dos and Don'ts of working with Electricity.
3. To make a chart of different tools used by a wireman and write their respective use. Identify the tools with actual.
4. To make a chart of different types of wires and protective devices used in electrical connection of residential places. Identify them in actual.
5. To calculate resistance values of colour coded resistors and check the values using a multimeter
6. To Skin different types of cable ends, Making various joints like twist joint, married joint, Tee joint in stranded conductors, Prepare T.W. Board for fixing Flush type accessories.
7. To assemble and make connection for single and twin fluorescent tube with electrical and electronic choke. Understand various faults and their remedies.
8. To make necessary connection for a ceiling fan and run it with necessary power supply, understand various faults and their remedies
9. To make wiring of lighting & power circuits using batten wiring. Test the installation before giving supply.
10. To make wiring of lighting & power circuits using conduit wiring. Test the installation before giving supply.
11. To make connections for controlling of light/ fan load from two or more points.
12. Measurement of earth resistance by earth tester.
13. To make wiring of single phase A.C. motor using D.O.L. starter and run the motor.
14. To measure phase and line voltage of a three phase supply and measure three phase current with a tong tester.
15. To make wiring of 3-phase A.C. motor (up to 5 HP) using D.O.L. starter and run the motor.
16. Measurement of illuminance at different working places by Lux meter. Hence make a comparative table from the above study.
17. To make the electrical connections of sodium vapour lamp & mercury vapour lamp.
18. To install and connect MCB, ELCB
19. Take the plan of two consecutive class rooms of your Institution with lights and fans as placed. Draw the wiring diagram (batten /conduit) of the two rooms for electrification starting from mains and make a list of the materials with specification required for the wiring.
20. Install an A.C. single phase one H.P motor using D.O.L starter & run it. The distance of the motor is 2 m. from the main distribution board. Draw the installation plan & make a list of materials with specification required for the installation.
21. Draw diagram of pipe earthing and plate earthing and show different parts in it.

OUTCOMES

Outcomes to be assessed	Assessment criteria for the outcome
1. Apply safety practices	1.1 apply the safety Practices.
	1.2 Define fires in electrical Circuits & it's Precautions.
	1.3 Classify the Fire Extinguishers & its Types.
	1.4 Familiarize with General Safety of Tools & equipment
	1.5 Know the process of Rescue of a person who is in contact with live wire.
	1.6 knows how to Treat a person for electric shock/ injury.
2. Classify Electrical Engineering Materials	2.1 Classify electrical engineering materials
	2.2 Identify properties of conducting material.
	2.3 Name of different conducting materials used for electrical engineering.
	2.4 Specify General properties of insulating material.
	2.5 Identify different insulating materials used for electrical purposes
	2.6 Familiarize with electronic components like resistors, Capacitor, Choke coil, Diode, Transistor
3. Identify different Symbols, Diagram & Rules.	3.1 Identify and draw the diagram & Symbols used in basic Electrical Circuits, Wiring & installations.
	3.2 Read the Colour Code of carbon Resistors.
	3.3 Recognize types of capacitor.
4. Identify Different Tools and Equipment.	4.1 Identify Driving Tools like Screwdriver, Allen Screwdriver/Wrench
	4.2 Identify Striking Tools like Claw Hammer, Mallet, Ball peen Hammer
	4.3 Identify Splicing / Gripping / Holding Tools like wrench & spanner, pipe wrench, Combination Pliers, Side Cutting Pliers, Long Nose Pliers, bench vice, pipe vices, Crimping Tools
	4.4 Identify Cutting Tools like hacksaw, wooden saw, knife , chisel , files, conduit pipe cutters.
	4.5 Identify Boring Tools like hand drill, Portable Electric Drill, Gimlet

	4.6 Identify Soldering Tools like Soldering iron, Desoldering pump, Soldering Tool Stand
	4.7 Identify Measuring Tools like standard wire gauge, micrometer, Ruler/Foot rule, plumb bob, bearing puller, Clamp-on ammeter, Neon Line tester, volt meter, multimeter (A V O), test lamp.
	4.8 Identify other Tools like hand gloves blow lamp, Earthing rod with chain, Fish Wire
5. Identify and install Different Types of Wires and Protective Devices used for domestic wiring	5.1 Identify different Types of wires.
	5.2 Determine the size of wire.
	5.3 Concept of gauge of wire.
	5.4 Determine current carrying capacity.
	5.5 Compare between copper and aluminium wire.
	5.6 Selection of conductor material. Making various joints like twist joint, married joint, Tee joint in stranded conductors
	5.7 Differentiate between types of switches.
	5.8 Identify and install Ordinary fuse, cartridge fuse, HRC fuse & cut out.
	5.9 Determine the size of Fuse according to the load of circuit and its location.
	5.10 Install Miniature circuit breaker (MCB)
	5.11 Install Earth leakage circuit breaker (ELCB).
6. Identify and install Different domestic Wiring System.	6.1 Identify and install Cleat wiring.
	6.2 Identify and install PVC casing and capping wiring.
	6.3 Identify and install Concealed conduit and Surface conduit wiring.
	6.4 Make wiring of lighting & power circuits using batten wiring. Test the installation before giving supply.
	6.5 Compare above types of wiring and criteria to select specific types.
7. Able to connect Domestic Wiring Installation as per lay out.	7.1 Identify and connect different Wiring accessories like Main switch, Distribution board, Junction box, Switchboard.
	7.2Design and Draw Sub circuit.
	7.3 Determine Positioning of wiring accessories.
	7.4 Draw and connect Simple light & Fan circuit.

	7.5 Draw and connect Power circuit.
	7.6 Draw and connect Staircase lighting circuits.
	7.7 Estimate the wiring materials. (For domestic wiring up to two rooms)
	7.8 Assemble and make connection for single and twin fluorescent tube with electrical and electronic choke.
	7.9 Make the necessary connection for a ceiling fan and run it with the necessary power supply.
8. Able to test insulation resistance & earth resistance of Installation.	8.1 Test Insulation resistance between installation & earth,
	8.2 Test Insulation resistance between conductors
	8.3 Test Polarity of single pole switch
	8.4 Test Earth continuity.
	8.5Test Earth resistance.
	8.6 Determine the use of test lamp and meggar in fault location
9. Estimate illuminations and connect sodium vapor lamp and mercury discharge lamp	9.1Explain Laws of illumination
	9.2 Define Luminous intensity, Illuminance, Luminous flux
	9.3 Identify factors affecting good illumination.
	9.4 Compute illumination at any point on a working plane.
	9.5 Measure illuminance at different working places by Lux meter.
	9.6 Draw the Connection diagram and connect a sodium vapor lamp
	9.7 Draw the connection diagram and connect a Mercury discharge lamp
10. Install single phase and three phase (up to 5HP)motor	10.1 Identify the rules for installation of power circuits.
	10.2 Identify guidelines for power circuit wiring in small industries.
	10.3 Concept of three phase supply.
	10.4 Define and understand Phase voltage, line voltage.
	10.5 Test three phase voltage with a test lamp and multimeter.
	10.6 Draw and read wiring diagram and single line diagram for A.C. motor installation.
	10.7 Estimate materials required for single phase motor installation.
	10.8 Estimate materials required for 3-phase A.C. motor installation(up to 5 (H.P)

	10.10 Install & run a single phase motor and a three phase A.C. motor (up to 5 (H.P) using D.O.L. starter
	10.11. Measure load current with Tong Tester
11. Understand different types of earthing in domestic installation.	11.1 Explain leakage current.
	11.2 Know the cause of earthing
	11.3 Identify Resistance of earth conductor.
	11.4 Identify different parts and know the process of laying pipe earthing.
	11.5 Identify different parts and know the process of laying plate earthing.