1. Title of the course : ELECTRICIAN AND MOTOR WINDING

2. Duration of the course : Six Months

Module	Contents	Duration	Ratio	
I	Basic Electrical	4 Weeks	2 T/DAY	4 P/DAY
II	Repair of Home Appliance	4 Weeks	2 T/DAY	4 P/DAY
III	House Wiring	4 Weeks	2 T/DAY	4 P/DAY
IV	Transformer Winding	4 Weeks	2 T/DAY	4 P/DAY
V	Armature Winding	4 Weeks	2 T/DAY	4 P/DAY
VI	Rewinding of AC/DC Motor	4 Weeks	2 T/DAY	4 P/DAY

* T-Theory
* P-Practical

Basic Electrical
Duration 4 Weeks
(Module 1)

Basic Electrical Theory

1.	Safety practice – o Lifting and handling loads. o Heavy Equipments
2.	Safety practice – o Fire extinguishers o Types of fire extinguishers
3.	General safety of tools and equipments
4.	Electrical safety o Rescue a person who is in contact with live wire.
5.	o Treat a person for electric shock/injury.
6.	Introduction to Electricity Conductors and types of conductors Insulators and types of insulators Crimping & crimping tool Soldering
7.	Define simple electrical terms like voltage, current, resistance and their units.
8.	Simple series and parallel circuits
9.	Direct current and testing the polarity Alternating current and identifying phase, neutral and earth terminals
10.	Purpose of Earthing Types of Earthing. o Pipe Earthing o Plate Earthing
11.	Simple house wiring circuit.

Basic Electrical Practical

1.	Safety practices – lifting and handling.
2.	Safety practices – Fire fighting
3.	Nature of working of tools and equipments.
4.	Electrical safety practice o Rescue a person who is in contact with live wire.
5.	Treat a person for electric shock/injury.
6.	Prepare Terminations o Skinning Different types of cable ends o Make various joints in cable o Crimping cable ends. o Soldering the cable lugs
7.	Simple electrical connections using resistance, voltmeter, and ammeter, multimeter
8.	Connecting number of lamps in series connection.
9.	Connecting number of lamps in parallel connection.
10.	Testing the polarity of DC supply. Identification of phase and neutral in single phase supply
11.	Carry out of pipe earthing Carry out of plate earthing
12.	Repairing of house wiring faults.

Repair of Home Appliance
Duration 4 Weeks
(Module 2)

Theory

1.	Install, service and repair all kinds of electrical home appliances
2.	Repair and rectification of an automatic electric iron, servicing and repairing of mixer, ceiling and table fan.
3.	Assemble and install a fluorescent6 lamp.
4.	Thermostat heat controls of Automatic electric iron, steam iron, spray irons. Understand home appliances like heater, iron, kettle ceiling fan, table fan, washing machine etc.
5.	Maintenance of decorative serial lamp for a required supply voltage
6.	Assemble, connect and install a twin fluorescent lamp with accessories
7.	Repair and service technique of cooking range, storage water heater, washing machines, wet grinders. Replace the heating element in a soldering.

Practical

1.	Safety precaution
2.	General repair of heating iron, kettle, ceiling fan, table fan, washing machine etc.,
3.	Test the fan capacitors. Clean and lubricate the bearing of ceiling and table fan, and check the speed. Regulator of both fan.
4.	Measure the insulation resistance between the terminals and body of the appliance. Check the oscillator mechanisms of table fan
5.	Select the fuse size according to the load of circuit
6.	Dismantle and reassemble automatic iron, ceiling fn table fan cooking range, storage heater, washing machines, and wet grinders etc.
7.	Determine the number of lamps to be connected in series for particular supply voltage for making decorative serial lamp.
8.	Check the internal connections of cooking range selector switch and circuits. connections in different temperature arrangements
9.	Check the simple mechanical timer, small water pump of washing machines and regular service and faults.
10.	Repair of house wiring.

House Wiring
Duration 4 Weeks
(Module 3)

Theory

1.	ISI rules related to wiring (General)
2.	Introduction to electricity. Conductor & Insulator. Joints in Electrical Conductor
3.	Diagram and systems used in domestic. wiring installation
4.	Earthing – Types. Earthing domestic installation. I E rule for Energy meter Installation.

Practical

1.	Safety precaution
2.	Common hand tools, their uses, care and maintenance.
3.	Identify the wiring accessories as per symbols.
4.	Make simple twist joints. Make married joint in stranded conductors. Make tee joint in stranded conductor.
5.	Prepare T.W Board for fixing Flush type accessories.
6.	Make the wiring layout for a bed room of a house with 6 points.
7.	Carryout the wiring in PVC casing and capping as per layout.
8.	Carryout pipe earthling as per I E rule.
9.	Prepare are mount energy meter board
10.	Carryout domestic installation testing

Transformer Winding
Duration 4 Weeks
(Module 4)

Theory

1.	Identification of phase and neutral in single-phase A/C. supply,
2.	Test a single-phase transformer for its continuity and insulation.
3.	Measuring a enameled winding wire with Std wire gauge.
4.	Wind/rewind a small transformer
5.	Use & Operation of hand operated and motorized coil winding machine. Impregnation Varnish after testing the transformer – its advantages.

Practical

1.	Safety precautions
2.	Testing the supply using test lamp with different wattage lamps.
3.	Take the dimensions of a bobbin and prepare the bobbin from suitable materials
4.	Measure and also determine the size of winding wire for primary and secondary
5.	Dismantle /reassemble the transformer cores
6.	Wind the primary and secondary winding layer by layer.
7.	Familiarization and operation with the motorized coil winding machine – General maintenance to be done Test the transformer for insulation, transformation ratio and performance

Armature Winding
Duration 4 Weeks
(Module 5)

Theory

1.	Type of winding like lap and wave winding Introduction to armature winding Method of dismantling the burnt winding wire.
2.	Terminology used in winding like pole pitch coid pitch back and front pitch progressive and retrogressive winding etc.
3.	A/C/DC armature winding.
4.	Preparation of winding data for given armature.
5.	Preparation of winding table , connection diagram, winding diagram for given armature.
6.	Impregnation methods of armature after rewinding and testing.

Practical

1.	Safety precautions
2.	Study the parts of armature. Check and test the armature. he old winding from the armature
3.	Record the winding data
4.	Prepare the armature for rewinding
5.	Wind the coils by hand insulate them
6.	Connection of armature leads on raiser.
7.	Understand end connection, electrical and distinguishing start and finish of each
8.	Varnish the armature winding

Rewinding of AC/DC Motor
Duration 4 Weeks
(Module 6)

Theory

1.	Knowledge about Single phase and 3-phase supply.
2.	Introduction to re-winding Insulating material used
3.	Terminology used in single phase and three phase winding like pole pitch coil pitch etc.,
4.	Method of stripping the old winding and preparing the winding former and the coils.
5.	Preparation of winding data for given Motor.
6.	Procedure followed for re-winding of all kind of electric motors like single phase A./C. motors, pump motors, ceiling fan motors, table fan motors, washing machine motors etc.
7.	Various methods used of inserting coil into the slots. Preparation of winding table , connection diagram, winding diagram for given Motor.
8.	Test to be done after re-winding-impregnation methods of winding

Practical

1.	Safety Precaution
2.	List the conducting and insulating materials used in motor winding
3.	Testing the motor before declaring for rewinding
4.	Prepare the winding former and the coils
5.	Method of stripping the old winding and preparing the winding former and the coils
6.	Method of inserting coil in the slots.
7.	Making end connections
8.	Testing the motor after rewinding
9.	Impregnation methods of winding

Tools & Equipments

1. Connector, 6"
2. Screw Driver 8" 10", 12"
3. Cutting Pliers 6", 8"
4. Neon Tester
5. Heavy Duty Screw Driver10", 12"
6. Nose Pliers 6"
7. Crimping tool
8. Volt meter 0-600 V (MC Type)
9. Volt meter 0-600 V (MI Type)
10. Ammeter 0-5 (MC Type)
11. Ammeter 0-5 (MI Type)
12. Watt meter 0-2.5KW
13. Energy meter 0-10A,240V
14. Multimeter
15. Megger 500V
16. Line Tester
17. Types of fire extinguishers
18. Common tools used in electrical field.
19. Soldering iron 25W, 250V
20. Electric Heater
21. Electric Iron
22. Electric Kettle
23. Ceiling Fan
24. Table Fan
25. Washing machine
26. Automatic Iron
27. Storage Heater
28. Cooking Range
29. Wet grinder
30. Round Nose Plier 15cm
31. Electrician Knife 10cm
32. BP Hammer 1/2kg,1/4kg
33. Cold Chisel 15cm
34. Tri Square 30cm
35. Fermer Chisel 14cm,20cm, 25cm,
36. Poker 15cm
37. Power Drilling Machine 6mm
38. Hacksaw 30cm
39. Wire shipper 10cm
40. Measuring Tape 5Metrs
41. Standard Wire Gauge
42. Motorized coil winding machine
43. Hand operated coil winding machine
44. Grumbler
45. Bench Wise