

DETAILED SYLLABUS

COURSE 1

Course Name: Fundamentals of Electricity and Electrical Wiring

Course Code: CEW-01

Credits - 4

Marks-100

UNIT 1: Introduction to the Electrician Trade

Electrician Trade : Scope of Electrician Trade, House Wiring, Employment opportunities; Dangers from misuse of electrical appliances and equipment; Responsibilities of Electrician and Wiremen.

UNIT 2: Introduction to Electricity and Electric Power

Definitions and Units; Static and Dynamic Electricity; Direct Current (DC) and Alternating Current (AC); Voltage Levels in AC; Advantages of AC.

UNIT 3: Electromagnetism and Common Electrical Appliance

Electromagnetism and its Application in Electric Appliances; Principles of AC Generators and Motors; Various Electrical Appliances; Measurement Methods of Electrical Parameters; Measuring Instruments of Electrical Parameters.

UNIT 4: Safety Requirement

Safety and Precaution : General steps to ensure safety, Safety Sign, Electrical Safety, Extension Cord, Rules and Regulations; Hazards of Electricity : Fire Hazard, Electric Shock; First Aid : First Aid Kit, First Aid in Common emergencies; Indian Electricity Rules and Indian Electricity Act.

UNIT 5: Electrical Wiring and Tools

Wiring and its Types : Cleat Wiring, Batten Wiring, Casing Capping Wiring, Conduit Wiring; Wiring Diagrams; Tools : Screw driver, Files, Chisel, Marking punch, Calipers, Gauge, Hacksaw, Bench vice, Hammer, Taps, Wrench, Crimping tool, Drilling machine.

Activities:

1. Design posters on electrical safety rules and the proper use of personal protective equipment (PPE) to promote safety awareness among learners.
2. Create a list of common troubleshooting issues encountered during the electrical wiring process.

COURSE: 2
Course Name: Elements of Wiring
Course Code: CEW-02

Credits - 4

Marks: 100

UNIT- 1: Wires and Accessories

Wires, cables and their characteristics; Terminations and joints; Wiring accessories; Safety Considerations and Regulations.

UNIT- 2: Electrical Measurement Instruments

Multimeter: Analog Multi-meter, Digital Multi-meter; Tester: Tong Tester, Energy-meter, Megger, Earth resistance meter, Power Factor meter; Extension of range of measurement instruments: Voltmeter, Ammeter, Loading effect of voltmeter, Voltage drop effect of an ammeter; High Voltage Testing and Measurements; Calibration.

UNIT- 3: Earthing

Earthing and its importance: Basic considerations of earthing, Measurement of soil resistivity; Types of ground connections, Pipe Earthing, Plate Earthing; Ground Testing.

UNIT- 4: Power Conditioning Appliances

Power Conditioning and its Importance; Different Power Conditioning Appliances: Battery, Inverter, Diesel Generator set, Stabilizer, UPS; Change over switch, Connection of water-pump and geyser.

UNIT- 5: Electrical Estimation and Costing

Estimating and Costing Fundamentals; Estimation of Single and Three Phase Wiring: Steps for Estimation and Costing of Electrical Installations, Costing calculations and Schedule of Rates; Estimation and Costing of House Wiring and Electrical Installations.

Activities:

1. Draw and label common electrical symbols used in house wiring diagrams.
2. Estimate the cost and material needed for wiring a 2-room layout.

COURSE 3
Course Name: Practical Manual of Electrical House Wiring
Course Code: CEW-03

Marks: 100

Credit: 8

EXPERIMENTS IN ELECTRICAL HOUSE WIRING

1. Experiments : Safety

- 1.1 Remedy & First Aid Practices in Electrical Injury
- 1.2 Safety practices on Fire Extinguisher

2. Experiments : Electrical Measurement

- 2.1 Calibration of Ammeter
- 2.2 Calibration of Voltmeter
- 2.3 Calibration of Wattmeter

3. Experiments : Measurements of Different Electrical Parameters

- 3.1 Measurement of Resistance by Ammeter-Voltmeter Method on DC Source
- 3.2 Measurement of Resistance by Ammeter-Voltmeter Method on AC source
- 3.3 Measurement of Frequency, Voltage, Current, Power, Power Factor, Energy in a Single Phase AC Circuit
- 3.4 Test of House Wiring With Megger Insulation Tester
- 3.5 Measurement of Earth Resistance by Electrical Earth Tester
- 3.6 Measurement of earth resistance by megger type earth tester

4. Experiments : Electrical Workshop Hand Tools and Consumables

- 4.1 Demonstration of Workshop Hand Tools and Consumables

5. Experiments : Cables and Wires As Per IS 732-1963-APP-D and Crimping of Thimbles and Lugs

- 5.1 Connecting a lug to a conductor

6. Experiments: Practices on Use of Wiring Accessories, T/W, PVC Board

- 6.1 Demonstration and Practice of Different electrical Circuit Connection
- 6.2 Various Switches and Other Fittings Used in Wiring
