

**COURSE 1**  
**FUNDAMENTALS OF ELECTRICITY & ELECTRICAL WIRING**  
**DETAILED SYLLABYS**

**UNIT 1: Introduction to the Electrician Trade (Marks: 15)**

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 (Marks: 10)**

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**

**(Marks: 25)**

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**

**(Marks: 25)**

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**

**(Marks: 25)**

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

**COURSE 2**  
**ELEMENTS OF WIRING**  
**DETAILED SYLLABUS**

**UNIT 1: Wires and Accessories**

**(Marks: 20)**

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

**UNIT 2: Electrical Measurement Instruments**

**(Marks: 20)**

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**

**(Marks: 20)**

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**

**(Marks: 20)**

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**

**(Marks: 20)**

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

**COURSE 3**  
**PRACTICAL ON 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 & Consumables
  - 4.1 Demonstration of Workshop Hand Tools & Consumables
5. Experiments: Cables & Wires as Per IS 732-1963-APP-D & Crimping of Thimbles & Lugs
  - 5.1 Connecting a lug to a conductor
6. Experiments: Practices on Use of Wiring Accessories, TW, PVC Board
  - 6.1 Demonstration & Practice of Different electrical Circuit Connection
  - 6.2 Various Switches and Other Fittings Used in Wiring

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