

# Electrical Technician

**Skill Based Elective -I**

**(Semester - III)**

## **Basics of Electricity and Electrical Equipments**

### **Unit-I**

Introduction – Atom- Flow of Electrons – Types of Electricity – Conductors and Insulators

### **Unit-II**

Magnetism – Various effects on electricity – Electrical circuits – Ohm's law Kirchaf's law – Electricity symbols – Electrical Accessories and Equipments

### **Unit-III**

Safety Procedure's- Wirings, Testing and Wiring – Importance of Earths – Tools handling.-house hold wiring and Industrial wiring-

### **Unit-IV**

Cells and Batteries-types and working Principles –Testing of batteries

### **Unit-V**

Electrical Circuits-Ac &Dc circuits-single phase and polyphase circuits-

### **References**

B.R. Guptha, Principles of Electrical Engineering, S. Chand & Co.,2002.

I.J. Nagrath, Elements of Electrical Engineering, Tata McGraw Hill Publishing Co Ltd., New Delhi. 2000.

**Electrical Home Appliances Lab**

1. Verify Ohms Law
2. Trouble Shooting Method of Tube Light
3. Trouble Shooting Method of Electric Fan
4. Trouble Shooting Method of Water Heater/Iron box
5. Trouble Shooting Method of Wet Grinder/Mixi/Motor
6. Trouble Shooting Method of Stabilizer/Eliminator
7. Trouble Shooting Method of Water Coolers
8. Trouble Shooting Method of A/c Machines
9. Trouble Shooting Method of Refrigerators
10. Trouble Shooting Method of Toasters

**References**

B.R. Gupta, Principles of Electrical Engineering, S. Chand & Co.,2002.

I.J. Nagrath, Elements of Electrical Engineering, Tata McGraw Hill Publishing Co Ltd., New Delhi. 2000.

**Measurements and Electrical Machines**

**Unit-I**

Concepts of Measurements – Types of measuring instruments – Functioning of instruments

**Unit-II**

Difference between moving iron and moving coil – Watt meter types – Meggar – Earth tester-  
Multimeter.-power calculations

**Unit-III**

Basics of AC – Advantages of AC with DC, Importance of Power factors – Transformers – Functioning –  
Alternators – Poly phase systems

**Unit-IV**

DC Motors –functions and types-Generators principles and types

**Unit-V**

AC motors and its types –alternator working principles and types

**References**

B.L. Theraja, Electrical Technology Vol I & II, S. Chand & Co., 6.Edward Hughes, Electrical and Electronics  
Technology, Pearson Education Limited, Ninth edition, 2005.

**Measurements and Electrical Machines**

1. Calibration of Voltmeter and Ammeter
2. Calibration of Watt Meter
3. Calibration of Single Phase Energy Meter
4. Load Test on DC Shunt Generator
5. Load Test on 1 Phase Alternators
6. Load Test on 3 Phase Alternators
7. Load Test on Single Phase Induction Motor
8. Study of Induction Motors Starters
9. Study of DC motor Starters
10. Load Sharing of two Single Phase Transformer

**References**

B.L. Theraja, Electrical Technology Vol I & II, S. Chand & Co., 6.Edward Hughes, Electrical and Electronics Technology, Pearson Education Limited, Ninth edition, 2005.

## **Skill Based Elective-V**

**(Semester – VI)**

### **Basic Electronics**

#### **Unit-I**

Introduction to electronics- safety Guidelines-applied electronics-Industrial electronics

#### **Unit-II**

Components, Resistors-Resistance colourcoding, Capacitors, Inductors. Diodes, Transistors, transformers and Switches. (Types, specifications, advantages and Applications) ,ICs

#### **Unit-III**

##### **Measurements**

Importance of measurements – Various measuring instruments – Analog multimeter - Digital multimeter – – Watt meter – Megger – Circuit Breakers – Voltage Stabilisers - Power calculation.

#### **Unit-IV**

##### **Circuits**

Rectifier, Filter, Regulator – Transistor Amplifiers, Oscillators-various circuits.  
-assembling half wave & Full Wave rectifier-Assembling and installation of Minor Projects-electronics in communications

#### **Unit-V**

##### **PCB Making**

Layout drawing conditions theory-PCB\_Making method theory-components arrangements details-components testing.

#### **References**

K.A. Muraleedharan, R. Muthusubramanian and S. Salivahanan, Basic Electrical and Electronics and Computer Engineering, Tata McGraw Hill, 1997.

Robert L. Boylestad & Louis Nashelsky Electronics devices and Circuit Theory, Pearson Education, 8<sup>th</sup> Edition, 2002.

**Electronics Lab**

1. Rectifiers – HWR and FWR (with & without capacitor filter)
2. Frequency Response of CE amplifier.
3. Frequency Response of CC amplifier
4. Frequency response of CS Amplifiers
5. Class A and Class B power amplifiers.
6. Wheatstone Bridge and Kelvin's Bridge for Measurement of Resistance.
7. Schering Bridge for Capacitance Measurement and Anderson Bridge for Inductance Measurement.
8. Determination of Critical Damping Resistance of a D'Arsonval Galvanometer.
9. Calibration of Ammeter and Voltmeter using Shunt and type Potentiometer.
10. Design, Construction and Calibration of series and shunt type Ohmmeters.

**References**

K.A. Muraleedharan, R. Muthusubramanian and S. Salivahanan, Basic Electrical and Electronics and Computer Engineering, Tata McGraw Hill, 1997.

Robert L. Boylestad & Louis Nashelsky Electronics devices and Circuit Theory, Pearson Education, 8<sup>th</sup> Edition, 2002.