Basic Electrical and Electronics Engineering

1. Electric Circuits

- 1.1. Basic Components of Electric Circuits
- 1.2. Charge
- 1.3. Current
- 1.4. Voltage and Power
- 1.5. Voltage Source and Current Source
- 1.6. Ohm's Law
- 1.7. Kirchhoff's Laws
- 1.8. Series and Parallel Connected Independent Sources
- 1.9. Resistors in Series and Parallel
- 1.10. Voltage Division and Current Division Rule
- 1.11. Mesh Current and Node Voltage Methods of Analysis - DC Circuits

2. Magnetic Circuits and Electrical Installations

- 2.1. Magnetic Circuits
- 2.2. Flux and Reluctance
- 2.3. Magnetic Field Intensity
- 2.4. Flux Density
- 2.5. Fringing
- 2.6. Self and Mutual Inductances
- 2.7. Domestic Wiring
- 2.8. Wires and Cables
- 2.9. Earthing
- 2.10. Protection Devices
- 2.11. Switch Fuse Unit

3. Electrical Machines

- 3.1. Construction and Working of DC Generator

- 3.2. Types of DC Generator
- 3.3. EMF Equation for DC Generator
- 3.4. Applications of DC Generators
- 3.5. Construction and Working of DC Motors
- 3.6. Types of DC Motor and Applications
- 3.7. Single Phase Transformer: Construction, Working and Applications
- 3.8. Three Phase Alternator: Construction, Working and Applications
- 3.9. Three Phase Induction Motor
- 3.10. Three Phase Synchronous Motor

4. Analog Electronics

- 4.1. Resistor, Inductor, and Capacitor in Electronic Circuits
- 4.2. PN Junction Diodes
- 4.3. Rectifiers
- 4.4. Zener Diode
- 4.5. Construction and Characteristics of Bipolar Junction Transistor
- 4.6. JFET
- 4.7. MOSFET
- 4.8. IGBT
- 4.9. SCR

5. Digital Electronics

- 5.1. Review of Number Systems
- 5.2. Binary Codes
- 5.3. Combinational Logic Circuits
- 5.4. Representation of Logic Functions - SOP and POS Forms
- 5.5. K-map Representations
- 5.6. Solved Problems

6. Practice Problems and Questions