**IIPM SCHOOL OF ENGINEERIN AND TECHNOLOGY**

**LESSON PLAN: SUMMER 22**

**Sub : BASIC ELECTRICAL ENGINEERING Semester-2ND**
**Faculty name : Mausumibala panda**
**Duration : 30 hours**
**Objective :**

- To be familiar with A.C Fundamental and circuits .
- To be familiar with basic principle and application of energy conversion devices
- . To be familiar with generation of Electrical power .
- To be familiar with wiring and protective device
- . To be familiar with calculation and commercial Billing of electrical power & energy .
- To have basic knowledge of various electrical measuring instruments & conservation of electrical energy.

**Learning Outcome :**

- The basic properties of electrical elements and solve DC Circuit analysis.
- The fundamental behaviour of AC Circuits and Solve AC Circuit problems.

| Sl.No | Chapter | Proposed Week for Teaching | Lecture No. | Sub. Topic | Important Teaching Points | Content Source |
|---|---|---|---|---|---|---|
| 1 | I | 1ST | 1 | FUNDAMENTALS | 1.Fundamentals<br>2.Concept of current flow.<br>3.Concept of source and load. | ABC of Electrical Engineering by Jain & Jain |
| 2 | | | 2 | | 1. Ohm's law and concept of resistance.<br>2.Relation of V, I & R in series circuit.<br>3.Relation of V, I & R in parallel circuit. | |
| 3 | | | 3 | | 1.Division of current in parallel circuit.<br>2. Effect of power in series & parallel circuit.<br>3.Numericals | |
| 4 | | | 4 | | 1.Kirchhoff's Laws<br>-Kirchhoff's Current law.<br>-Kirchhoff's Voltage Law.<br>2.Numericals | |
| 5 | II | 2ND | 1 | | 1. Generation of alternating emf.<br>2.Difference between D.C. & A.C. | |

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| 6 | | | 2 | A.C. THEORY | 1.Definition- Amplitude, instantaneous value, cycle, Time period, frequency, phase angle, phase difference. | ABC of Electrical Engineering by Jain & Jain |
| 7 | | | 3 | | 1.RMS value, Average value, Amplitude factor & Form factor. | |
| 8 | | | 4 | | 1.Represent AC values in phasor diagrams.<br>2.AC through pure resistance, inductance & capacitance. | |
| 9 | | 3rd | 1 | | 1. Concept of Power and Power factor.<br>2.Impedance triangle and power triangle | |
| | | | 2 | | | |
| | | | 3 | | | |
| 10 | | | 4 | | 1.Numericals | |
| 11 | | | | | Assignment | |
| 12 | III | 4th | 1 | GENERATION OF ELECTRICAL POWER | 1.Introduction<br>2.Block diagram of Thermal power station Advantages,Disadvanages | ABC of Electrical Engineering by Jain & Jain |
| 13 | | | 2 | | 1.Hydroelectric Power station. Advantages,Disadvanages | |
| 14 | | | 3 | | 1.Nuclear power station. Advantages,Disadvanages | |
| 15 | | | 4 | | Assignment | |
| 16 | IV | 5th | 1 | CONVERSION OF ELECTRICAL ENERGY | 1.Introduction of DC machines.<br>2.Main parts of DC machines. | ABC of Electrical Engineering by Jain & Jain |
| 17 | | | 2 | | 1Principle of operation of DC generator.<br>2. EMF equation of DC generator. | |
| 18 | | | 3 | | 1.Classification of DC generator.<br>3.Numericals | |
| 19 | | | 4 | | 1.Uses of different types of DC generators & motors.<br>2. Types and uses of single phase induction motors.<br>3.Types and uses of 3-phase inductionmotors. | |

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| 20 | | 6th | 1 | | 1.Principle of operation of DC motor.<br>2. Classification of DC motor. | |
| 21 | V | | 2 | WIRING AND POWER BILLING | 1.Wiring-Introduction<br>2.Types of wiring for domestic installations. | ABC of Electrical Engineering by Jain & Jain |
| 22 | | | 3 | | 1.Layout of household electrical wiring (single line diagram showing all the important component in the system). | |
| 23 | | | 4 | | 1.The basic protective devices used in house hold wiring.<br>2.Calculate energy consumed in a small electrical installation | |
| 24 | | 7th | 1 | | Numericals | |
| 25 | VI | | 2 | MEASURING INSTRUMENTS | 1.Different uses of PMMC type of instruments (Ammeter & Voltmeter).<br>2. Different uses of MI type of instruments (Ammeter & Voltmeter) | ABC of Electrical Engineering by Jain & Jain |
| 26 | | | 3 | | 1.connection diagram of A.C/ D.C Ammeter, voltmeter, energy meter and wattmeter. (Single phase ). | |
| 27 | | | 4 | | Assignment | |
| 28 | VII | 8th | 1 | CONSERVATION OF ELECTRICAL ENERGY | 1.Introduction<br>2. Concept of Lumen | ABC of Electrical Engineering by Jain & Jain |
| 29 | | | 2 | | 1.Different types of Lamps<br>2.Filament, fluorescent lamp<br>3. Mercury Vapour lamp( Construction and Principle) | |
| 30 | | | 3 | | 1.Sodium Vapour lamp<br>2.Neon, LED bulb Construction and Principle | |
| 31 | | | 4 | | 1.Star rating of home appliances (Terminology, Energy efficiency, Star rating Concept) | |
| 32 | | | 1 | | Assignment | |