Utkalmani Gopabandhu Institute of Engineering, Rourkela-4

Dept of Electrical Engineering

LESSON PLAN

Course Name: Basic Electrical (Th 4(a))
Semester: 1st

Course Objectives:

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

Chapter 1

Class 1. Concept of current flow, source and load.

2. Definition of Ohm's law and concept of resistance.
3. Relation of V, I & R in series circuit & in parallel circuit.
4. Division of current in parallel circuit & effect of power in series & parallel circuit.
5. Definition of Kirchhoff's Law simple problems on Kirchhoff's law.

Chapter 2

Class 6. A brief idea on gneration of alternating emf & Difference between D.C. & A.C.

7. Definition of Amplitude, instantaneous value, cycle, Time period, frequency, phase angle, phase difference with an example.
8. Definition and explanations of RMS value, Average value, Amplitude factor & Form factor with simple problems.
9. Representation of AC values in phasor diagrams through pure resistance, inductance & capacitance
10. AC though RL, RC, RLC series circuits with simple problems.
11. Problems related to RLC problems. Concept of Power and Power factor
12. Impedance triangle and power triangle.

Chapter 3

Class 13. Elementary idea on generation of electricity from thermal power station with block diagram.

14. Elementary idea on generation of electricity from hydro power station with block diagram.

15. Elementary idea on generation of electricity from nuclear power station with block diagram.

Chapter 4

Class 16. Introduction of DC machines & Main parts of DC machines.

17. Principle of operation of DC generator & DC motor.
18. EMF equation of generator and simple problem. Definition & application of transformer.
19. Classification of DC generator, DC motors & their applications.
20. Classification & application of single phase & three phase induction motor.

Chapter 5

Class 21. Types of wiring for domestic installations.

22. Layout of household electrical wiring (single line diagram showing all the important Component in the system).

23. List out the basic protective devices used in house hold wiring.
24. Calculate energy consumed in a small electrical installation.

Chapter 6

Class 25. Introduction to measuring instruments & torques in instruments.

26. Different uses of PMMC & MI type of instruments (Ammeter & Voltmeter).
27. Drawing of the connection diagram of A.C/ D.C Ammeter, voltmeter, energy meter and wattmeter. (Single phase only)

Chapter 7

Class 28. Concept of Lumen & Different types of Lamps, Construction & Principle of filament lamps, fluorescent lamps, Neon bulb)

29. Construction & Principle of Mercury Vapour, Sodium Vapour lamps. LED bulb)
30. Star rating of home appliances (Terminology, Energy efficiency, Star rating Concept)

Learning Materials:

1. Lecture Notes
2. Concept of Basic Electrical Enginnering, P.K Das and A.K. Mallick by B.M Publications
3. Fundamentals of Electrical Engg and Electronics by B.L Thereja
4. Fundamentals of Electrical Engg by Asfaq Hussain

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