LESSON PLAN

DISCIPLINE:– **MECHANICAL ENGG.**	SEMESTER :–6th	NAME OF THE TEACHING FACULTY:– **BHABANI SANKAR SAHOO**
SUBJECT:- **POWER STATION ENGINEERING (TH -3)**	NO.OF DAYS /WEEK CLASS ALLOTTED - 4	SEMESTER FROM DATE:- **04.02.2025** TO DATE: **17.05.2025** NO. OF WEEKS- **15**

Week	Class Day	Theory Topics
1st	1st	**1.0 INTRODUCTION:** 1.1 Describe sources of energy.
	2nd	1.2 Explain concept of Central and Captive power station.
	3rd	1.3 Classify power plants
	4th	1.4 Importance of electrical power in day today life.
2nd	1st	1.5 Overview of method of electrical power generation.
	2nd	**2.0 THERMAL POWER STATIONS:** 2.1 Layout of steam power stations.
	3rd	2.2 Steam power cycle. Explain Carnot vapour power cycle with P-V, T-s diagram and determine thermal efficiency.
	4th	Solve Simple Problems
3rd	1st	2.3 Explain Rankine cycle with P-V, T-S & H-s diagram
	2nd	Determine thermal efficiency, Work done, work ratio, and specific steam Consumption.
	3rd	2.4 Solve Simple Problems
	4th	2.5. List of thermal power stations in the state with their capacities
4th	1st	2.6 Boiler Accessories: Operation of Air pre heater, Operation of Economiser,
	2nd	Operation Electrostatic precipitator and Operation of super heater
	3rd	Need of boiler mountings and operation of boiler
	4th	2.7 Draught systems (Natural draught, Forced draught & balanced draught) with their advantages & disadvantages.
5th	1st	2.8 Steam prime movers: Advantages & disadvantages of steam turbine
	2nd	Elements of steam turbine, governing of steam turbine
	3rd	Performance of steam turbine: Explain Thermal efficiency, Stage efficiency and Gross efficiency. Simple problems.
	4th	2.9 Steam condenser: Function of condenser, Classification of condenser
6th	1st	Function of condenser auxiliaries such as hot well, condenser extraction pump
	2nd	Air extraction pump, and circulating pump.
	3rd	2.10 Cooling Tower: Function and types of cooling tower
	4th	spray ponds

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7th	1st	2.11 Selection of site for thermal power stations.
	2nd	**3.0 NUCLEAR POWER STATIONS:** 3.1 Classify nuclear fuel (Fissile & fertile material)
	3rd	3.2 Explain fusion and fission reaction.
	4th	3.3 Explain working of nuclear power plants with block diagram.
8th	1st	3.4 Explain the construction of nuclear reactor.
	2nd	3.4 Explain the working of nuclear reactor.
	3rd	3.5 Compare the nuclear and thermal plants
	4th	3.6 Explain the disposal of nuclear waste.
9th	1st	Explain the working principle of PWR & BWR
	2nd	3.7 Selection of site for nuclear power stations.
	3rd	3.8 List of nuclear power stations.
	4th	**4.0 DIESEL ELECTRIC POWER STATIONS:** 4.1 State the advantages and disadvantages of diesel electric power stations.
10th	1th	4.2 Explain briefly different systems of diesel electric power stations
	2nd	Fuel storage and fuel supply system
	3rd	Fuel injection system
	4th	Air supply system
11th	1st	Exhaust system
	2nd	Cooling system, Lubrication system
	3rd	Starting system, governing system.
	4th	4.3 Selection of site for diesel electric power stations.
12th	1st	4.4 Performance and thermal efficiency of diesel electric power stations.
	2nd	**5.0 HYDEL POWER STATIONS:** 5.1 State advantages and disadvantages of hydroelectric power plant.
	3rd	5.2 Classify hydroelectric power plant
	4th	5.2 explain the general arrangement of storage type hydroelectric project
13th	1st	5.2 explain hydroelectric project operation.
	2nd	5.3 Selection of site of hydel power plant.
	3rd	5.4 List of hydro power stations with their capacities
	4th	Number of units in the state.
14th	1st	5.5 Types of generator used
	2nd	5.5 Types of turbines used
	3rd	5.6 Simple problems
	4th	**6.0 GAS TURBINE POWER STATIONS** 6.1 Selection of site for gas turbine stations
15th	1st	6.2 Fuels for gas turbine
	2nd	6.3 Elements of simple gas turbine power plants
	3rd	6.4 Merits and demerits of gas turbine power plants.
	4th	6.4 Application of gas turbine power plants.

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LearningResources:

1. Power Plant Engineering, Laxmi Publication --R.K Rajput
2. Power Plant Engineering, TMH --P.K.Nag
3. Power Plant engineering, Khanna Publisher -- Nagpal G.R

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