

TH3

GOVERNMENT POLYTECHNIC, DHENKANAL**LESSON PLAN: POWER STATION ENGINEERING****6TH SEMESTER (2024-25)**

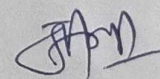
Discipline: Mechanical Engineering	Semester: 6 th	Name of the Teaching Faculty: PRADEEP KUMAR JENA
Subject: PSE	No. of Days/ per week class allotted: 04	Semester From Date: 04/02/2025 To Date: 17/05/2025 No of weeks: 14
Week	Class day	Theory / Practical Topics
1ST	1ST	INTRODUCTION: Describe sources of energy
	2ND	Explain concept of Central and Captive power station
	3RD	Classification powerplants.
	4TH	Importance of electrical power in day to day life.
2ND	1ST	Overview of method of electrical power generation.
	2ND	THERMAL POWER STATIONS: Layout of Modern steam power stations
	3RD	Steam powercycle. Explain Carnot vapour power cycle with P-V, T-s diagram and determine thermal efficiency.
	4TH	Explain Rankine cycle with P-V, T-S & H-s diagram and determine Thermal efficiency, Workdone, Workratio, and Specific Steam Consumption.
3RD	1ST	Solve Simple Problems.
	2ND	List of thermal power stations in the state with their capacities.
	3RD	Boiler Accessories: Operation of Air preheater,
	4TH	Operation of Economizer, Operation Electrostatic precipitator
4TH	1ST	Operation of superheater.
	2ND	Need of boiler mountings and operation of boiler
	3RD	Draught systems-Natural draught
	4TH	Forced draught & Balanced draught
5TH	1ST	Advantages & Disadvantages.
	2ND	Steam prime movers: Advantages & disadvantages of steam turbine,
	3RD	Elements of steam turbine, Governing of steam turbine.
	4TH	Compounding of steam turbine

6 TH	1 ST	Performance of steam turbine: Explain Thermal efficiency, Stage efficiency and Gross efficiency.
	2 ND	Steam condenser: Function of condenser, Classification of condenser.
	3 RD	Function of condenser auxiliaries such as hot well, Condenser extraction pump, Air extraction pump, and circulating pump.
	4 TH	Cooling Tower: Function and types of cooling tower.
7 TH	1 ST	Spray ponds, Selection of site for thermal power stations.
	2 ND	NUCLEAR POWER STATIONS: Introduction, Compare the nuclear and thermal plants, its advantages & disadvantages.
	3 RD	Classify nuclear fuel (Fissile & fertile material)
	4 TH	Various terminology relating to Nuclear Power.
8 TH	1 ST	Explain fusion and fission chain reaction.
	2 ND	Selection of site for nuclear power stations.
	3 RD	Explaining the various components of nuclear reactor
	4 TH	Explaining PWR & BWR.
9 TH	1 ST	Selection of site for nuclear power station with lists of nuclear power stations.
	2 ND	Explain the disposal of nuclear waste.
	3 RD	State the advantages and disadvantages of diesel electric power stations.
	4 TH	Comparison with Thermal power plant
10 TH	1 ST	Explain briefly different systems of diesel electric power stations: Fuel storage and fuel supply system
	2 ND	Fuel injection system
	3 RD	Air supply system, Exhaust system, Cooling system
	4 TH	Lubrication system, Starting system, Governing system
11 TH	1 ST	Selection of site for diesel electric power stations
	2 ND	Performance and thermal efficiency of diesel electric power stations
	3 RD	HYDEL POWER STATIONS: Introduction, State the advantages and disadvantages of hydroelectric power plant.
	4 TH	Comparison with Thermal power plant
12 TH	1 ST	Classification and explaining the general arrangement of storage type hydro electric project
	2 ND	Explaining the operations of other types of hydro electric project

	3 RD	Selection of site of hydel power plant.
	4 TH	List of hydro powerstations with their capacities and number of units in the state.
13 TH	1 ST	Brief idea about the types of turbines and generation used.
	2 ND	Micro, Mini & Small Hydropower projects
	3 RD	Solving Simple nuclear problems.
	4 TH	GASTURBINEPOWERSTATIONS Introduction
14 TH	1 ST	Selection of site for gas turbine stations, Fuels for gas turbine
	2 ND	Elements of simple gas turbine power plants
	3 RD	Operation of GasTurbine Power Station
	4 TH	Merits, demerits and application of gas turbine power plants.



Signature of Faculty Concerned



Signature of H.O.D