



**GANPATI INSTITUTE OF ENGINEERING & TECHNOLOGY (Polytechnic), JAGATPUR, CUTTACK**  
**DEPARTMENT OF MECHANICAL ENGINEERING.**

**LESSON PLAN-2026 SUMMER**

DISCIPLINE:- MECHANICAL ENGG.	SEMESTER :- 6 <sup>th</sup>	NAME OF THE TEACHING FACULTY:- <b>BHABANI SANKAR SAHOO</b>
SUBJECT:- POWER STATION ENGINEERING (TH 3)	NO. OF DAYS /WEEK CLASS ALLOTTED - 4	SEMESTER FROM DATE:- <b>22.12.2025</b> TO DATE: <b>18.04.2026</b> NO. OF WEEKS- <b>15</b>
<b>Week</b>	<b>Class Day</b>	<b>Theory Topics</b>
1st	1 <sup>st</sup>	<b>1.0 INTRODUCTION:</b> 1.1 Describe sources of energy.
	2 <sup>nd</sup>	1.2 Explain concept of Central and Captive power station.
	3 <sup>rd</sup>	1.3 Classify power plants
	4 <sup>th</sup>	1.4 Importance of electrical power in day today life.
2nd	1 <sup>st</sup>	1.5 Overview of method of electrical power generation.
	2 <sup>nd</sup>	<b>2.0 THERMAL POWER STATIONS:</b> 2.1 Layout of steam power stations.
	3 <sup>rd</sup>	2.2 Steam power cycle. Explain Carnot vapour power cycle with P-V, T-s diagram and determine thermal efficiency.
	4 <sup>th</sup>	Solve Simple Problems
3rd	1 <sup>st</sup>	2.3 Explain Rankine cycle with P-V, T-S & H-s diagram
	2 <sup>nd</sup>	Determine thermal efficiency, Work done, work ratio, and specific steam Consumption.
	3 <sup>rd</sup>	2.4 Solve Simple Problems
	4 <sup>th</sup>	2.5. List of thermal power stations in the state with their capacities
4th	1 <sup>st</sup>	2.6 Boiler Accessories: Operation of Air pre heater, Operation of Economiser,
	2 <sup>nd</sup>	Operation Electrostatic precipitator and Operation of super heater
	3 <sup>rd</sup>	Need of boiler mountings and operation of boiler
	4 <sup>th</sup>	2.7 Draught systems (Natural draught, Forced draught & balanced draught) with their advantages & disadvantages.
5th	1 <sup>st</sup>	2.8 Steam prime movers: Advantages & disadvantages of steam turbine
	2 <sup>nd</sup>	Elements of steam turbine, governing of steam turbine
	3 <sup>rd</sup>	Performance of steam turbine: Explain Thermal efficiency, Stage efficiency and Gross efficiency. Simple problems.
	4 <sup>th</sup>	2.9 Steam condenser: Function of condenser, Classification of condenser
6th	1 <sup>st</sup>	Function of condenser auxiliaries such as hot well, condenser extraction pump
	2 <sup>nd</sup>	air extraction pump, and circulating pump.
	3 <sup>rd</sup>	2.10 Cooling Tower: Function and types of cooling tower
	4 <sup>th</sup>	2.11 Selection of site for thermal power stations. spray ponds

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*23.12.25*



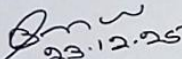
7 <sup>th</sup>	1 <sup>st</sup>	CLASS TEST
	2 <sup>nd</sup>	3.0 NUCLEAR POWER STATIONS:
	3 <sup>rd</sup>	3.1 Classify nuclear fuel (Fissile & fertile material)
	4 <sup>th</sup>	3.2 Explain fusion and fission reaction.
8 <sup>th</sup>	1 <sup>st</sup>	3.3 Explain working of nuclear power plants with block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

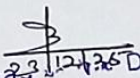
## Learning Resources:

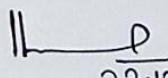
1. Power Plant Engineering, Laxmi Publication -- R.K Rajput
2. Power Plant Engineering, TMH --P.K.Nag
3. Power Plant engineering, Khanna Publisher-- Nagpal G.R

Prepared By

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