

Discipline: <u>MECHANICAL</u>	Semester: <u>6th</u>	Name of the Teaching Faculty: <u>ER. DEVI PRASAD ACHARYA</u>
Subject: <u>POWER STATION ENGG.</u>	No. of days/per week class allotted: 4 PERIODS	Semester From date: 22/12/2025 To date: No of weeks: 15
Week	Class Day	Theory Topics:
1st	1st	INTRODUCTION: Sources of energy.
	2nd	Concept of Central and Captive power station.
	3rd	Classification of Power Plants.
	4th	Importance of Electric Power in day to day life.
2nd	1st	Overview of method of electrical power generation
	2nd	STEAM POWER PLANT: Layout of steam power plant.
	3rd	Steam power cycle (Rankine cycle)
	4th	P-V, T-S & H-s diagram of Rankine cycle,
3rd	1st	Thermal efficiency, Work done. Work ratio, Specific steam Consumption.
	2nd	Simple Numerical Problems based on Rankine cycle
	3rd	Reheat cycle and Regenerative cycle
	4th	combination of Reheat and Regenerative cycle, advantages and disadvantages of these processes
4th	1st	List of thermal power stations in the state with their capacities.
	2nd	Boiler Accessories: Air pre heater, Economiser, Electrostatic precipitator and superheater.
	3rd	Boiler mountings, Different mountings and their uses
	4th	Draught systems (Natural draught, Forced draught & balanced draught) with their advantages & disadvantages.

5 th	1 st	Steam prime movers: Advantages & disadvantages of steam turbine, Elements of steam turbine
	2 nd	Compounding of steam turbine
	3 rd	Governing of steam turbine.
	4 th	Performance of steam turbine: Thermal efficiency, Stage efficiency and Gross efficiency.
6 th	1 st	Steam condenser: Function of condenser, Classification of condenser (jet and surface condensers)
	2 nd	Function of condenser auxiliaries such as hot well, condenser extraction pump, air extraction pump, cooling water and circulating pump
	3 rd	Cooling Tower: Function and types of cooling tower, Various types of cooling tower (Natural draft cooling tower and Mechanical draft cooling tower)
	4 th	Selection of site for thermal power stations.
7 th	1 st	Revision of Chapter-II
	2 nd	NUCLEAR POWER PLANT: Classification of nuclear fuel (Fissile & fertile material) Nuclear Fusion & Fission Reaction.
	3 rd	Construction and working of nuclear power plant:
	4 th	Components of nuclear reactor such as fuel, moderator, reflector.
8 th	1 st	Components of nuclear reactor: coolant, control rod, Shielding, reactor vessel.
	2 nd	Function of the components.
	3 rd	Principle and working of Pressurized Water Reactor(PWR)
	4 th	Principle and working of Boiler Water Reactor(BWR)

9 th	1 st	Comparison between nuclear and thermal plants.
	2 nd	Disposal methods of nuclear waste.
	3 rd	Selection of site for nuclear power stations. List of nuclear power stations.
	4 th	DIESEL ENGINE POWER PLANT: Brief explanation about different systems of diesel power plant.
10 th	1 st	Fuel storage and fuel supply system,
	2 nd	Fuel injection system,
	3 rd	Air supply system
	4 th	Exhaust system, Cooling system
11 th	1 st	Lubrication system
	2 nd	Starting system, Governing system
	3 rd	State the advantages and disadvantages of diesel plant
	4 th	Selection of site for diesel electric power stations.
12 th	1 st	Performance and thermal efficiency of diesel electric power stations.
	2 nd	HYDEL POWER PLANT: Principle of hydro-electric power generation,
	3 rd	Classification of hydel power plant
	4 th	General arrangement of storage type hydroelectric project

13 th	1 st	Components of hydroelectric power plant
	2 nd	Working of hydroelectric power plant
	3 rd	Turbines used in hydroelectric power plant
	4 th	State advantages and disadvantages of hydroelectric power plant.
14 th	1 st	Selection of site of hydel power plant.
	2 nd	List of hydro power stations with their capacities and number of units in the state.
	3 rd	Simple problems.
	4 th	GAS TURBINE POWER STATIONS
15 th	1 st	Selection of site for gas turbine stations.
	2 nd	Fuels for gas turbine
	3 rd	Elements of simple gas turbine power plants
	4 th	Merits, demerits and application of gas turbine power plants

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