

Discipline: <u>MECHANICAL</u>	Semester: <u>6th</u>	Name of the Teaching Faculty: <u>ER. BIKASH MURMU</u> <u>Sr.Lecturer Mechanical</u>
Subject: <u>POWER STATION ENGG.</u>	No. of days/per week class allotted: 4	Semester From date: 14.2.23 To date: No of weeks: 15
Week	Class Day	Theory Topics:
1 st	1 st	INTRODUCTION: Sources of energy.
	2 nd	Concept of Central and Captive power station.
	3 rd	Classification of Power Plants.
	4 th	Importance of Electric Power in day to day life.
2 nd	1 st	Overview of method of electrical power generation
	2 nd	STEAM POWER PLANT: Layout of steam power plant.
	3 rd	Steam power cycle (Rankine cycle)
	4 th	P-V, T-S & H-s diagram of Rankine cycle.
3 rd	1 st	Thermal efficiency, Work done, Work ratio, Specific steam Consumption.
	2 nd	Simple Numerical Problems based on Rankine cycle
	3 rd	Reheat cycle and Regenerative cycle
	4 th	combination of Reheat and Regenerative cycle, advantages and disadvantages of these processes
4 th	1 st	List of thermal power stations in the state with their capacities.
	2 nd	Boiler Accessories: Air pre heater, Economiser, Electrostatic precipitator and superheater.
	3 rd	Boiler mountings, Different mountings and their uses
	4 th	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.


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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
	NUCLEAR POWER PLANT:	
	2 nd	Classification of nuclear fuel (Fissile & fertile material) Nuclear Fusion & Fission Reaction.
	3 rd	Construction and working of nuclear power plant:
8 th	4 th	Components of nuclear reactor such as fuel, moderator, reflector.
	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)
9 th	4 th	Principle and working of Boiler Water Reactor (BWR)
	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.
10 th	DIESEL ENGINE POWER PLANT:	
	4 th	Brief explanation about different systems of diesel power plant.
	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.
	HYDEL POWER PLANT:	
	2 nd	Principle of hydro-electric power generation.
	3 rd	Classification of hydro power plant
13 th	4 th	General arrangement of storage type hydroelectric project
	1 st	Components of hydroelectric power plant
	2 nd	Working of hydroelectric power plant
	3 rd	Turbines used in hydroelectric power plant
14 th	4 th	State advantages and disadvantages of hydroelectric power plant.
	1 st	Selection of site of hydro power plant.
	2 nd	List of hydro power stations with their capacities and number of units in the state.
	3 rd	Simple problems.
15 th	4 th	GAS TURBINE POWER STATIONS
	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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