



GANAPATI INSTITUTE OF ENGINEERING & TECHNOLOGY (Polytechnic)
DEPARTMENT OF MECHANICAL ENGINEERING

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:-10.03.2022 TO DATE:-10.06.2022 NO.OF WEEKS- 15
Week	ClassDay	Theory/PracticalTopics
1st	1 st	1.0 INTRODUCTION: 1.1 Describe sources of energy.
	2 nd	1.2 Explain concept of Central and Captive power station.
	3 rd	1.3 Classify power plants
	4 th	1.4 Importance of electrical power in day today life.
2nd	1 st	1.5 Overview of method of electrical power generation.
	2 nd	2.0 THERMAL POWER STATIONS: 2.1 Layout of steam power stations.
	3 rd	2.2 Steam power cycle. Explain Carnot vapour power cycle with P-V, T-s diagram and determine thermal efficiency.
	4 th	Solve Simple Problems
3rd	1 st	2.3 Explain Rankine cycle with P-V, T-S & H-s diagram
	2 nd	Determine thermal efficiency, Work done, work ratio, and specific steam Consumption.
	3 rd	2.4 Solve Simple Problems
	4 th	2.5. List of thermal power stations in the state with their capacities
4th	1 st	2.6 Boiler Accessories: Operation of Air pre heater, Operation of Economiser,
	2 nd	Operation Electrostatic precipitator and Operation of super heater
	3 rd	Need of boiler mountings and operation of boiler
	4 th	2.7 Draught systems (Natural draught, Forced draught & balanced draught) with their advantages & disadvantages.
5th	1 st	2.8 Steam prime movers: Advantages & disadvantages of steam turbine
	2 nd	Elements of steam turbine, governing of steam turbine
	3 rd	Performanceofsteamturbine: ExplainThermal efficiency,Stage efficiency and Gross efficiency. Simple problems.
	4 th	2.9 Steam condenser: Function of condenser, Classification of condenser
6 th	1 st	Function of condenser auxiliaries such as hot well, condenser extraction pump
	2 nd	air extraction pump, and circulating pump.
	3 rd	2.10 Cooling Tower: Function and types of cooling tower
	4 th	spray ponds

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

LearningResources:

- 1.** Powerplantengineering,LaxmiPublication -- R.KRajput
- 2.** Power plant engineering,TMH --P.K.Nag
- 3.** Powerplantengineering,KhannaPublisher-- NagpalG.R