| DISCIPLINE:– **MECHANICALENGG**. | SEMESTER :–**6th** | NAME OF THE TEACHING FACULTY:– **BHABANI SANKAR SAHOO** |
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| SUBJECT:- **POWER STATION ENGINEERING(TH 3)** | NO.OF DAYS /WEEK CLASS ALLOTTED **- 4** | SEMESTER FROM DATE**:- 14.02.2023** TO DATE: **23.05.2023** NO.OF WEEKS- **15** |
| **Week** | **ClassDay** | **Theory/PracticalTopics** |
| 1st | 1st | **1.0 INTRODUCTION:** 1.1 Describe sources of energy. |
| | 2nd | 1.2 Explain concept of Central and Captive power station. |
| | 3rd | 1.3 Classify power plants |
| | 4th | 1.4 Importance of electrical power in day today life. |
| 2nd | 1st | 1.5 Overview of method of electrical power generation. |
| | 2nd | **2.0 THERMAL POWER STATIONS:** 2.1 Layout of steam power stations. |
| | 3rd | 2.2 Steam power cycle. Explain Carnot vapour power cycle with P-V, T-s diagram and determine thermal efficiency. |
| | 4th | Solve Simple Problems |
| 3rd | 1st | 2.3 Explain Rankine cycle with P-V, T-S & H-s diagram |
| | 2nd | Determine thermal efficiency, Work done, work ratio, and specific steam Consumption. |
| | 3rd | 2.4 Solve Simple Problems |
| | 4th | 2.5. List of thermal power stations in the state with their capacities |
| 4th | 1st | 2.6 Boiler Accessories: Operation of Air pre heater, Operation of Economiser, |
| | 2nd | Operation Electrostatic precipitator and Operation of super heater |
| | 3rd | Need of boiler mountings and operation of boiler |
| | 4th | 2.7 Draught systems (Natural draught, Forced draught & balanced draught) with their advantages & disadvantages. |
| 5th | 1st | 2.8 Steam prime movers: Advantages & disadvantages of steam turbine |
| | 2nd | Elements of steam turbine, governing of steam turbine |
| | 3rd | Performanceofsteamturbine: ExplainThermalefficiency,StageefficiencyandGrosse fficiency. Simpleproblems. |
| | 4th | 2.9 Steam condenser: Function of condenser, Classification of condenser |
| 6th | 1st | Function of condenser auxiliaries such as hot well, condenser extraction pump |
| | 2nd | air extraction pump, and circulating pump. |
| | 3rd | 2.10 Cooling Tower: Function and types of cooling tower |
| | 4th | spray ponds |

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

**LearningResources:**

**1.** Powerplantengineering,LaxmiPublication -- R.K Rajput
**2.** Power plant engineering,TMH --P.K.Nag
**3.** Powerplantengineering,KhannaPublisher-- Nagpal G.R

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