|  |
| --- |
|  **LESSON PLAN**-**6TH SEMESTER MECHANICAL ENGG. (2022)** |
| **Subject**- [**TH.3] POWER STATION ENGINEERING** |
| **Name of the Faculty- KABIRAJ SAHU.****Semester from date 10.03.2022 to date 10.06.2022****NO. OF WEEKS - 15** |
|  |  |
|  | **CHAPTER****/UNIT** | **COURSE TO BE COVERED** | **CLASSES REQUIRED** | **REMARKS (IF ANY)** |  |
|  | **Chapter-1** | **INTRODUCTION:** | **(05)** |  |  |
|  | **1.1** | Describe sources of energy. | 2 |  |  |
|  | **1.2** | Explain concept of Central and Captive power station. | 1 |  |  |
|  | **1.3,1.4** | Classify power plants, Importance of electrical power in day today life | 1 |  |  |
|  | **1.5** | Overview of method of electrical power generation. | 1 |  |  |
|  | **Chapter -2** | **THERMAL POWER STATIONS** | **(20)** |  |  |
|  | **2.1** | **Layout of steam power stations** | **1** |  |  |
|  | **2.2** | **Steam power cycle. Explain Carnot vapour power cycle with P-V, T-s diagram and determine thermal efficiency.** | **1** |  |  |
|  | **2.3** | **Explain Rankine cycle with P-V, T-S & H-s diagram and determine thermal efficiency, Work done, work ratio, and specific steam Consumption** | **2** |  |  |
|  | **2.4** | **Solve Simple Problems.** | **2** |  |  |
|  | **2.5** | **List of thermal power stations in the state with their capacities** | **1** |  |  |
|  | **2.6** | **Boiler Accessories: Operation of Air pre heater, Economiser, Electrostatic precipitator and super heater. Need of boiler mountings and operation of boiler.** | **2** |  |  |
|  | **2.7** | **Draught systems (Natural draught, Forced draught & balanced draught) with their advantages & disadvantages.** | **2** |  |  |
|  | **2.8** | **Steam prime movers:****Advantages & disadvantages of steam turbine,.** | **1** |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Elements of steam turbine, governing of steam turbine** | **1** |  |
|  |  | **Performance of steam turbine: Explain Thermal efficiency, Stage efficiency and Gross efficiency.** | **2** |  |
|  | **2.9** | **Steam condenser:****Function of condenser, Classification of condenser. function of condenser auxiliaries such as hot well, condenser extraction pump, air extraction pump, and circulating pump.** | **3** |  |
|  | **2.10****,****2.11** | **Cooling Tower:****Cooling Tower: Function and types of cooling tower, and spray ponds , Selection of site for thermal power stations.** | **2** |  |
|  | **Chapter-3** | **NUCLEAR POWER STATIONS:** | **(10)** |  |
|  | **3.1** | **Classify nuclear fuel (Fissile & fertile material)** | **1** |  |
|  | **3.2** | **Explain fusion and fission reaction** | **2** |  |
|  | **3.3** | **Explain working of nuclear power plants with block diagram.** | **2** |  |
|  | **3.4** | **Explain the working and construction of nuclear reactor** | **2** |  |
|  | **3.5** | **Compare the nuclear and thermal plants.** | **1** |  |
|  | **3.6** | **Explain the disposal of nuclear waste.** | **1** |  |
|  | **3.7,3.8** | **Selection of site for nuclear power stations and List of nuclear power stations** | **1** |  |
|  | **Chapter-4** | **DIESEL ELECTRIC POWER STATIONS:** | **(10)** |  |
|  | **4.1** | **State the advantages and disadvantages of diesel electric power stations.** | **1** |  |
|  | **4.2** | **Explain briefly different systems of diesel electric power stations: Fuel storage and fuel supply system, Fuel injection system, Air supply system, Exhaust system, cooling system, Lubrication system, starting system,.** | **6** |  |
|  | **4.3** | **governing system ,Selection of site for diesel electric power stations.** | **1** |  |
|  | **4.4** | **Performance and thermal efficiency of diesel electric power stations** | **2** |  |
|  | **Chapter-5** | **HYDEL POWER STATIONS:** | **(10)** |  |
|  | **5.1** | **State advantages and disadvantages of hydroelectric power plant.** | **2** |  |
|  | **5.2** | **Classify and explain the general arrangement of** | **3** |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **storage type hydroelectric project and explain its operation** |  |  |
|  | **5.3,5.4** | **Selection of site of hydel power plant and List of hydro power stations with their capacities and number of units in the state.** | **2** |  |
|  | **5.5** | **Types of turbines and generation used** | **1** |  |
|  | **5.6** | **Simple problems** | **2** |  |
|  | **Chapter-6** | **GAS TURBINE POWER STATIONS** | **(05)** |  |
|  | **6.1** | **Selection of site for gas turbine stations** | **1** |  |
|  | **6.2** | **Fuels for gas turbine** | **1** |  |
|  | **6.3** | **Elements of simple gas turbine power plants** | **2** |  |
|  | **6.4** | **Merits, demerits and application of gas turbine power plants.** | **1** |  |