

Code No: R1641034

R16

Set No. 1

IV B.Tech I Semester Regular/Supplementary Examinations, Jan/Feb - 2022

POWER PLANT ENGINEERING

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A (14 Marks)

1. a) Give the merits and demerits of using cyclone burner over the other types of burners in a boiler? [2]
- b) Discuss the advantages and disadvantages of Gas Turbine Power plant. [2]
- c) Discuss the factors which should be considered while selecting a site for hydroelectric plant. [3]
- d) Write a short note on fertile and fissionable material. [2]
- e) What are the advantages of combinedly operating the power plants in electric power system? [2]
- f) Define diversity factor and load factor. How they influence plant design, operation and economics? [3]

PART-B (4x14 = 56 Marks)

2. a) Describe the various feeding systems used to the fire pulverized coal. [7]
- b) Explain the working of a Chain Grate Stoker with the help of a sketch. [7]
3. a) Draw a neat sketch of a Diesel engine power plant showing all the important components and discuss their function. [7]
- b) Discuss the brief note on the Combustion Chambers of a Gas Turbine power plant. [7]
4. a) State the function of a dam. How are dams classified? Briefly describe important types of dams. [6]
- b) The runoff data of a river at a particular site for twelve months is tabulated as given below: [8]

Month	Runoff(Mm ³) per month	Month	Runoff(Mm ³) per month
January	40	July	90
February	30	August	120
March	25	September	130
April	15	October	80
May	00	November	50
June	60	December	40

- i) Draw the hydrograph and find the mean flow.
- ii) Draw the flow duration curve.



5. a) What do you understand by control of a reactor? What different controls are necessary in a thermal power reactor? [7]
b) With the help of a neat sketch, explain a fast breeder reactor. [7]
6. a) Explain the method of determining the distribution of the given load among the two plants for most economic generation. [7]
b) What do you understand by photocell? Draw a line diagram of smoke meter and explain its working. [7]
7. a) What do you understand by acid rains? What are the reasons for this? How they are controlled? [6]
b) The peak load on a power plant is 60MW. The loads having maximum demand of 30MW, 20MW, 15MW and 10MW are connected to the power plant. The capacity of the power plant is 80MW and the annual load factor is 0.80. Estimate i) the average load on the power plant, ii) the demand factor, iii) the diversity factor, iv) the utilization factor and the v) the plant capacity factor. [8]

