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Eighth Semester B.E. Degree Examination, July/August 2022
Power Plant Engineering

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. Draw a general layout of a steam power plant, showing the different circuits and system and explain them. (10 Marks)
b. Explain with a neat sketch of chain grate stoker. (06 Marks)
c. List the merits and demerits of pulverized coal. (04 Marks)
- 2 a. Sketch and explain Loeffler boiler and also justify. Why forced circulation is necessary for high feature boiler. (10 Marks)
b. List and explain in brief the features and advantages of high pressure boiler. (07 Marks)
c. List the steps in coal handling. (03 Marks)
- 3 a. Explain with neat a sketch the forced, induced and balanced draught chimneys. (09 Marks)
b. Explain with neat sketch
i) Air pre-heater
ii) Natural draught hyperbolic cooling tower. (08 Marks)
c. List and explain the different method of controlling the temperature of superheated steam. (03 Marks)
- 4 a. Explain with neat sketch air intake system and exhaust system of diesel power plant. (12 Marks)
b. Sketch and explain open cycle and closed cycle gas turbine. (08 Marks)

PART – B

- 5 a. Explain the terms hydrograph, Mass curve, water hammer, surge tank and penstock. (10 Marks)
b. The run off data of a river at a particular site is tabulated below :

Month	Mean discharge in millions of m ³ /month	Month	Mean discharge in millions of m ³ /month
Jan	40	July	70
Feb	25	Aug	100
Mar	20	Sept	105
Apr	10	Oct	60
May	0	Nov	50
June	50	Dec	40

- i) Draw a hydrograph and find the mean flow
- ii) Draw the flow duration curve
- iii) Find the power in MW available at mean flow if the head available is 100m and overall efficiency of generation is 80%. (10 Marks)

- 6 a. Sketch and explain pressurized water reactor. (08 Marks)
b. Define the terms moderator, fission reaction and nuclear fuels. (07 Marks)
c. Define multiplication ratio and explain the conditions to be satisfied for self sustained chain reaction. (05 Marks)
- 7 a. Define load factor, diversity factor, plant capacity factor, demand factor and plant use factor. (10 Marks)
b. The peak load for a power station is 35MW the loads having maximum demands of 20MW, 10MW, 5MW and 7MW are connected to the power station. The capacity of power station is 40MW and annual load factors is 55%. Find :
i) Average load on power station
ii) Annual energy supplied
iii) Demand factor
iv) Diversity factor. (10 Marks)
- 8 a. Explain briefly straight line meter, step meter and block meter tariff. (09 Marks)
b. List the requirement of tariffs. (05 Marks)
c. Explain the performance and operating characteristics of power plant. (06 Marks)
