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10ME833

Eighth Semester B.E. Degree Examination, July/August 2021
Power Plant Engineering

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Explain the working of a spreader stoker with the help of neat sketch and state its advantages and limitations. (10 Marks)
- b. Explain the different methods used for supplying fuel to the boilers. Discuss the advantages and disadvantages of each. (10 Marks)
- 2 a. Classify the ash handling system. Explain the mechanical ash handling system with neat sketch. (10 Marks)
- b. Explain with neat sketch the working of Benson boiler. Mention its advantages. (10 Marks)
- 3 a. Define and classify the boiler draught. Explain the forced and induced draught with neat sketch. (10 Marks)
- b. A chimney of 28 meter high and temperature of hot gases inside the chimney is 320°C. The temperature in atmosphere is 23°C and 15 kg of air is supplied per kg of coal burnt. Calculate: (i) Draught in mm of water (ii) Draught head in meter of hot gases (10 Marks)
- 4 a. Discuss the salient features for selecting Diesel Power plants over thermal plants. (10 Marks)
- b. Compare the open and closed cycle turbine. (10 Marks)
- 5 a. Enlist the advantages and disadvantages of Hydro-Electric power plants. (10 Marks)
- b. The runoff data of a river at a particular site is tabulated below:

Month	Mean discharge in millions m ³ /month	Month	Mean discharge in millions m ³ /month
Jan	80	Jul	150
Feb	50	Aug	200
Mar	40	Sept	220
Apr	20	Oct	120
May	00	Nov	100
Jun	100	Dec	80

- (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 100 meter and overall efficiency of generation is 80%. (Assume an average of 30 days in each month) (10 Marks)
- 6 a. Briefly explain the classification of nuclear reactor. (10 Marks)
- b. With neat sketch, explain the gas cooled reactor. Also enlist the advantages and disadvantages. (10 Marks)
- 7 a. Explain in detail the stages of site selection for Hydro Electric Power Plant. (10 Marks)
- b. The peak load on a power station is 40 MW. The loads having maximum demands of 18 MW, 12 MW, 8 MW, 9 MW are connected to the power station. The capacity of the power station is 50 MW. Annual load factor is 62%, find:
 - (i) Average load on the power station
 - (ii) Energy supplied per year
 - (iii) Demand factor
 - (iv) Diversity factor (10 Marks)
- 8 a. Explain the performance and operating characteristics of power plant. (10 Marks)
- b. Enlist various types of tariff and explain any two of them with neat sketch. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.