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10ME833

Eighth Semester B.E. Degree Examination, Aug./Sept.2020
Power Plant Engineering

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO full questions from each part.***

PART – A

1 a. With the help of a neat diagram explain the working of sprcader stoker. State the limitations of it. **(10 Marks)**

b. Sketch and explain the following pulverized fuel handling system:
i) Unit system and
ii) Central or Bin system. **(10 Marks)**

2 a. Classify the ash handling system. Explain the working principle of mechanical handling system with neat sketch. **(10 Marks)**

b. What are the advantages of high pressure boiler? With a neat sketch, explain the working a Lamont boiler. **(10 Marks)**

3 a. Explain the importance of cooling tower in a steam power plant. Describe the working principle of Natural drought and Forced drought with neat sketch. **(10 Marks)**

b. Define drought. How the drought are classified. Prove that the drought produced in mm of water head by a Chimney is given by

$$hw = 353H\left[\frac{1}{T_a} - \frac{1}{T_g}\left[\frac{n_a + 1}{m_a}\right]\right]$$ **(10 Marks)**

4 a. Enumerate the considerations to be made for setting up a Diesel engine power plant. **(06 Marks)**

b. Give the layout of a diesel engine power plant. **(06 Marks)**

c. Explain briefly the following with reference to a diesel engine power plant:
i) Wet pump lubrication system
ii) Dry pump lubrication system. **(08 Marks)**

PART – B

5 a. Write a note on storage and pondage. **(10 Marks)**

b. At a particular site the mean monthly discharge is as follows:

Month	Discharge m^3/s	Month	Discharge m^3/s
Jan	100	July	830
Feb	210	Aug	1010
March	310	Sept	820
April	500	Oct	610
May	650	Nov	420
June	790	Dec	200

Draw the following: i) Hydrograph ii) Flow diagram. **(10 Marks)**

6 a. Show the important parts of a nuclear reactor with neat sketch. Describe briefly the function of each part. **(08 Marks)**

b. Explain the characteristic futures of a pressurized water reactor (PWR) and list out the advantage of PWR. **(08 Marks)**

c. What are the different types of nuclear waste? Give a brief account of nuclear waste disposal. **(04 Marks)**

7 a. Define the following terms:
- i) Plant load factor
- ii) Use factor
- iii) Capacity factor
- iv) Diversity factor
- v) Demand factor **(10 Marks)**

b. What are the considerations to be made while selecting the suitable site for a nuclear power plant? **(04 Marks)**

c. A 60MW power station has a annual peak load of 50MW. The power station supplies loads having maximum demands of 20MW, 17MW, 10MW and 9MW. The annual load factor is 0.45. Find: i) Average load ii) Energy supplied per year iii) Diversity factor iv) Demand factor. **(06 Marks)**

8 Write short notes on the following:

a. Application of Hydro-Electric power plants
b. Air preheater
c. Straight motor tariff and block meter tariff
d. Selection of site for Hydro-Electric power plant. **(20 Marks)**

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