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10ME833

Eighth Semester B.E. Degree Examination, June/July 2015
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. What are the advantages of stoker firing? Explain the working of traveling grate stoker with a simple sketch. State its outstanding features. (10 Marks)
b. What is pulverized coal? Explain the BIN system of handling pulverized coal with a neat diagram. List the advantages and disadvantages of using pulverized coal. (10 Marks)
2. a. Draw a neat diagram of velox boiler and explain its working and advantages. (10 Marks)
b. Classify the ash handling system. Explain the working principle of mechanical handling system with neat sketch. (10 Marks)
3. a. Explain with sketch: i) Super heater; ii) Desuperheater. (08 Marks)
b. Describe the working principle of natural draught cooling tower with neat sketch. (04 Marks)
c. Explain the importance of cooling tower in a steam power plant. (02 Marks)
d. Calculate the mass of flue gases flowing through the chimney when the draught produced is equal to 2.0cm of water. Temperature of flue gases is 290°C and ambient temperature is 27°C. The flue gases formed per kg of fuel burnt are 23kg. Neglect the losses and take the diameter of the chimney as 1.9m. (06 Marks)
4. a. Explain the necessity of cooling systems in diesel engine. What are the methods of cooling the engine? Explain. (06 Marks)
b. Explain the importance of lubrication system in diesel power plant. (04 Marks)
c. List at least six advantages and four disadvantages of diesel engine power plant. (05 Marks)
d. Explain the working principle of closed cycle gas turbine with neat sketch. (05 Marks)

PART – B

5. a. What are the advantages and disadvantages of hydro electric plants? (08 Marks)
b. Explain the following:
i) Hydrographs ii) Storage and pondage iii) Water hammer. (12 Marks)
6. a. With the help of sketch show all the important parts of nuclear reactor describing briefly the function of each part. (08 Marks)
b. Explain the characteristic feature of a boiling water reactor. What do you mean by internal and external circulation? (08 Marks)
c. Write short notes on disposal of radioactive wastes. (04 Marks)

- 7 a. Define the following terms:
 i) Peak load ii) Demand factor iii) Load factor iv) Diversity factor. (08 Marks)
- b. What are considerations to be made while selecting the suitable site for a thermal and a nuclear power plants? (06 Marks)
- c. A base load power station and stand by power station share a common load as follows: ↑

Base load station annual output	= 180×10^6 kWh
Base load capacity	= 42 MW
Maximum demand on base load station	= 36 MW
Standby station capacity	= 22 MW
Standby station annual output	= 17×10^6 kWh
Maximum demand (peak load) on standby station	= 18 MW

Determine the following for both power stations i) Load factor ii) Capacity factor. (06 Marks)

- 8 a. Enumerate various type of tariff and explain any two of them. (08 Marks)
- b. What are the objectives and requirements of tariff? (04 Marks)
- c. Explain the performance and operating characteristics of power plant. (08 Marks)