Code No: 117GP

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, November/December - 2016
POWER PLANT ENGINEERING
(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each
question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) List out the fuel and handling equipments. [2]
   b) Classify cooling Towers used in power plants. [3]
   c) What is meant by super charging? [2]
   d) Differentiate the open and closed cycle of GT. [3]
   e) What is the need of spill ways? [2]
   f) What is VAWT? [3]
   g) What is meant by Fertile materials in nuclear fuels? [2]
   h) What are the types of nuclear reactors? [3]
   i) What is the need of load curves? Explain. [2]
   j) How to control the pollution? [3]

PART -B

(50 Marks)

2.a) Explain the basic FBC system with line diagram.
   b) Draw line diagram and explain the working of hydraulic cooling tower. [5+5]

OR

3.a) With the help of line diagram, explain the central pulverized fuel handling system.
   b) What for draught system is used and explains its significance. [5+5]

4.a) Which types of I.C Engines are used in diesel power plant and explain them in detail.
   b) Explain the working details with line diagram of MHD generation. [5+5]

OR

5.a) Explain the working details of gas turbine power plant indicating all auxiliaries.
   b) Draw the schematic representation of Fuel cell and explain its working (Hydrogen and oxygen). [5+5]

6.a) Compare and contrast between storage and pondage.
   b) Draw line diagram and explain how the low temperature solar power plant. [5+5]

OR

7.a) Draw the line diagram and explain the working details of hydro power plant giving salient points.
   b) Draw the general layout of tidal power plant and what are the limitations of that plant.

[5+5]

8.a) What are the principal parts of a nuclear reactor? Explain the working of each part.
   b) Draw the line diagram and explain the working of Gas cooled reactor. [5+5]

OR

9.a) What are the radiation hazards and also explain the effect of shielding.
   b) Draw the line diagram and explain the pressurized water reactor and its limitations. [5+5]

10.a) Enumerate briefly various methods used to calculate the depreciation cost.
   b) A generation station supplies the following loads 15MW, 12MW, 8MW and 0.5MW. The station has a maximum demand of 20MW and the annual load factor is 0.5. Find
      i) Number units supplied annually   ii) Diversity factor   [5+5]

OR

11.a) Enumerate the latest pollution laws in existence.
   b) The yearly duration curve of a certain plant can be considered as a straight line from 150 MW to 40 MW. The power is supplied with one generating unit of 100 MW and two units of 40MW each. Calculate installed capacity, load factor, Plant factor, utilization factor and Maximum demand.

[5+5]

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