Total No. of Questions : 12] SEAT No. :

P1941

[Total No. of Pages : 3

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B.E. (Mechanical)

POWER PLANT ENGINEERING

(2008 Pattern)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Solve Q 1 or 2, Q 3 or 4, Q5 or 6 From Section - I***

   Solve Q 7 or 8, Q 9 or 10, Q 11 or 12 From Section - II.

2) ***Figures to the right indicate full marks.***

3) ***Neat diagrams must be drawn wherever necessary.***

4) ***Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam table is allowed.***

5) ***Assume suitable data, if necessary.***

SECTION - I

UNIT - I

Q1) a) Write a short note on present status of power generation in India. **[8]**

b) Discuss various tariff methods for electricity consumers in India. **[8]**

OR

Q2) a) Discuss points to be considered in choosing the type of electricity generation. **[8]**

b) A 30 MW plant has an overall efficiency of 25%. The calorific value of fuel used is 25,000 KJ/kg. Estimate cost of coal per 24 hour if load factor of the plant is 0.4. One ton of coal cost Rs 650. **[8]**

UNIT - II

Q3) a) Explain a concept of fluidized bed combustion with neat sketch. Quote merits of fluidized bed combustion over conventional methods of combustion. **[8]**

b) Explain the complete coal preparation process for pulverized coal power plant with a schematic sketch. **[8]**

P.T.O.

OR

Q4) a) The following readings were taken during a test on condenser **[8]**

Vaccum in condenser = 700 mm of Hg

Barometric reading = 762mm of Hg

Temperature of steel entering into condenser = 35°C

Inlet and outlet temperature of water = 16.7°C and 31°C.

Determine condenser efficiency and Vacuum efficiency.

b) Explain reheat and regeneration cycle and represent it on P-V and T-S diagram. **[8]**

UNIT - III

Q5) a) Write the significance of hydro graph and flow duration curve. **[6]**

b) Write a detailed survey of site selection for hydro electric power plants. **[6]**

c) Explain methods to improve thermal efficiency of simple open cycle constant pressure gas turbine power plant. **[6]**

OR

Q6) a) Explain different arrangements of power components in gas turbine plant. **[6]**

b) Derive the expression for intermediate pressure for minimum work required in the compressor in gas turbine. **[6]**

c) Discuss the various parameters used for selection of turbine for hydro electric power plant. **[6]**

SECTION - II

UNIT - IV

Q7) a) Sketch and explain functional elements of nuclear power plant. **[8]**

b) Write a short not on : **[8]**

i) log sheet

ii) Selection of diesel engine size

OR

Q8) a) Explain diesel engine performance and operation curves. **[8]**

b) Explain PWR and SGR Nuclear reactors. **[8]**

UNIT - V

Q9) a) Explain recent developments in methods of power generation. **[8]**

b) Explain construction and working of simple air circuit breakers and oil circuit breakers. **[8]**

OR

Q10)a) Explain various functioning elements and instrumentations in power plants. **[8]**

b) Discuss solar power generation status in India. Sketch and explain solar power plant. **[8]**

UNIT - VI

Q11)a) Write a short note on water pollution by thermal power plants and its control. **[6]**

b) Write a short note on different pollutants and their effects on human health. **[6]**

c) Explain pre and post treatment for harmful pollutants emitted from power plant. **[6]**

OR

Q12)Write short note on any three of the following : **[18]**

a) Global warming and Green house effect

b) Acid rains

c) Thermal pollution by nuclear power plant

d) Carbon fixation method

e) Pollution sources in mega cities of India