Total No. of Questions : 6]

P15

SEAT No. :

[Total No. of Pages : 2

APR-17/BE/Insem.-16
B.E. (Mechanical)
POWER PLANT ENGINEERING
(2012 Pattern) (Semester - II)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates :

1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.*
2) *Neat diagram must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data if necessary.*

Q1) a) Write a note on role of private organizations in power generations to meet the power demands of the nation. **[4]**

b) A power plant of 210 MW installed Capacity has the following particulars:

Capital cost = Rs. 18000/Kw installed

Interest and depreciation = 12%

Annual Load Factor = 60%

Annual Capacity Factor = 54%

Annual running Charges = Rs. 200×10^6

Energy consumed by power plant auxiliaries = 6%

Calculate i) Cost of power generation per kWh

ii) The reserve capacity

OR

Q2) a) Explain **[4]**

i) Carbon credit

ii) Load shedding

b) A power plant has the following annual factors: **[6]**

Load factor = 0.75, capacity factor = 0.60, use factor = 0.65, Maximum demand is 60 MW. Estimate

i) Annual energy production

ii) The reserve capacity over and above the peak load

iii) The hours during which the plant is not in service, per year.

P.T.O.

Q3) a) Draw Rankine cycle with reheat and regeneration on T-S plane. **[4]**

b) The following readings were taken during a test on a surface condenser:

Mean condenser temperature = 35^0C, Hot well temperature = 30^0C, condenser vacuum = 69 cm of Hg, barometer reading 76 cm of Hg. Condensate collected 16kg/min. Cooling water enters at 20^0 C and leaves at 32.5^0 C, flow rate being 37,500 kg/h. Calculate **[6]**

a) mass of air present per cubic meter of condenser

b) quality of steam at condenser inlet

c) Vacuum efficiency

d) Condenser efficiency

OR

Q4) a) Explain the analysis of co-generation plants. **[5]**

b) Exhaust steam having quality of 0.9 enters a surface condenser at an absolute pressure of 0.13 bar and comes out as water at 450C. Estimate the quantity of circulating water and the condenser efficiency. **[5]**

Q5) a) Explain the important factors to be considered for site selection for a hydroelectric power plant. **[6]**

b) Write a note on fuel moderators used in nuclear power plants. **[4]**

OR

Q6) a) Explain pressurized boiling water reactor with neat sketch. **[6]**

b) Explain the disadvantages of hydro electric power plant. **[4]**

⊖⊖⊖