Total No. of Questions : 6]

SEAT No. :

P1334

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BE/Insem/APR-168
B.E. (Mechanical/Mechanical-Sandwich)
ENERGY ENGINEERING
(2015 Pattern) (Semester - II)

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

Instructions to the candidates:

1) ***Answer three questions from following.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Use steam tables, logarithmic tables, slide rule, mollier charts, electronic pocket calculator is allowed.***
5) ***Assume suitable data, if necessary.***

Q1) a) Explain in short General layout of modern thermal power plant with different circuits. **[4]**

b) A steam power plant incorporates an ideal reheat cycle to improve existing efficiency. Steam at 30 bar and 250 °C is supplied at the HPT inlet and expands till it is dry saturated at 3 bar. Now the steam is taken to a reheater and its temperature is again increase to 250°C at constant pressure reheating process. The reheated steam expands in the LPT to a condenser pressure of 0.04 bar. Determine the cycle efficiency. **[6]**

OR

Q2) a) Write a short note on ash handling system. **[4]**

b) A power plant turbine receives steam at an enthalpy of 4000 kJ/kg. The enthalpy of extracted steam to the condenser is 2000 kJ/kg. The turbine bleeds steam for heating feed water in a regenerative feed water heater about 4 kg of steam per second at a pressure of 4 bar. The quality of steam is 90 % dry. The condensate coming from the condenser is fed to the heater by means of a pump. The condensate has an enthalpy of 150 kJ/kg before entering the heater and becomes saturated while leaving the heater at 4 bar. Determine the power developed by turbine. **[6]**

Q3) a) Explain in short wet cooling tower. **[4]**

b) Explain different pollutants from thermal power plants and their effects on human health. **[6]**

P.T.O.

OR

Q4) a) In a condenser test, the following observations were made: **[6]**

Vacuum = 720 mm of mercury

Barometer = 765 mm of mercury

Mean temperature of condensation = 34 °C

Determine the following:

i) Vacuum corrected to standard barometer of 760mm

ii) Vacuum efficiency

b) Explain Electrostatic Precipitator (ESP) with schematic diagram. **[4]**

Q5) a) Explain Hydro power plant with schematic layout. **[5]**

b) Explain Boiling Water Reactor (BWR) with neat sketch. **[5]**

OR

Q6) a) Explain the terms related to Nuclear power plant **[6]**

i) Moderator

ii) Control rod

iii) Shielding

b) Explain Environmental impacts of Hydroelectric Power Plant. **[4]**

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