

Total No. of Questions : 10]

P3045

SEAT No. :

[Total No. of Pages : 3

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B.E. (Mechanical)

POWER PLANT ENGINEERING

(2012 Pattern) (End Semester)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.
- 2) Draw a neat diagram wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Use of calculator, steam tables is allowed.
- 5) Assume suitable data if necessary.

Q1) a) How load duration curve is obtained from load curve? What is its significance in power generation? [6]

b) What is the present status of power generation in India? [4]

OR

Q2) a) Define 'Vacuum efficiency' applied to a condenser? State the effects of air leakage on the performance of a condenser. [4]

b) A power station has maximum demand of 80 MW, a load factor of 0.7, plant capacity factor of 0.5 and plant use factor of 0.90. Find i) Daily energy produced ii) Reserve capacity of the plant, and iii) Maximum energy that could be produced daily if the plant operating schedule is fully loaded when in operation. [6]

Q3) a) Write a note on hydrograph and flow duration curve. What is the utility of flow duration curve? [6]

b) What is reheating employed in Rankine cycle? How does reheating improve the cycle efficiency? [4]

OR

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Q4) a) Explain the working of CANDU reactor with a neat sketch. [6]

b) What is mass curve? How the reservoir capacity is determined with the help of mass curve. [4]

Q5) a) Draw the schematic diagram of diesel power plant showing all the system used and explain the working. [8]

b) A simple gas turbine plant operating on the Brayton cycle has air entering compressor at 10 kPa and 27°C. The pressure ratio is 9 and maximum cycle temperature will be 727°C. What will be the percentage change in cycle efficiency & net work output if the expansion in the turbine is divided into two stages each of pressure ratio 3, with intermediate reheating to 727°C? Assume compression and expansion are ideal isentropic. [8]

OR

Q6) a) Explain with neat sketch gas turbine with Reheating and Regenerator. [8]

b) What are outstanding features of diesel plants over the thermal plants? Why diesel plants are not used for high capacity? What are its drawbacks when used for high capacity compared to steam plants? [8]

Q7) a) What is geothermal energy? Discuss the utilization of vapour dominated hypothermal fluid for power generation with a schematic diagram. [8]

b) Explain the working of wind horizontal axis wind generator with the help of schematic diagram. [8]

OR

Q8) a) What is a hybrid power generation system? Explain with neat sketch working of solar-wind hybrid systems. Also list its merits. [8]

b) Write a short note on : [8]

i) Fuel Cell

ii) OTEC

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Q9) a) What is Thermal pollution by thermal and nuclear power plant? What is effect of thermal pollution on surrounding environment? [9]

b) What are the different types of relay. What is its function? With neat sketch explain any two types of relay used in power plants. [9]

OR

Q10) a) What are green house gases and green house effect? Explain its effect on global warming. How we can control green house gases emissions? [9]

b) What is switch gear? What are its functions? Explain different types of switch gear installations. [9]
