

Total No. of Questions : 8]

SEAT No. :

**P 475**

[Total No. of Pages : 2

**[6003]-583**

**T.E. (Mechanical) (Honors)**

**ENERGY MANAGEMENT IN UTILITY SYSTEM**

**Energy Efficiency in Thermal Utilities**

**(2019 Pattern) (Semester - II) (302023 MJ)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right of each question indicate full marks.
- 4) Assume suitable data wherever necessary and mention the same clearly.

**Q1) a)** Explain working of mechanical float type trap with neat schematic diagram. **[10]**

b) What are the advantages of condensate system in process industry? **[8]**

OR

**Q2) a)** Write in detail about “flash steam recovery” from steam condensate. **[10]**

b) Explain why steam is used as a heat transfer medium. **[8]**

**Q3) a)** What is refractory? Discuss properties of the refractory used in furnace. **[10]**

b) Discuss factors on which furnace wall losses depends. **[7]**

OR

**Q4) a)** List applications of furnaces. Explain typical furnace with neat diagram. **[10]**

b) What is the role of insulation in furnace? Explain any five important properties of Ceramic Fibers used in furnaces **[7]**

**Q5) a)** Explain the concept of cogeneration. Compare “Topping Cycle” and “Bottoming Cycle” with one example each and schematic diagram. **[10]**

b) List down all the Important Technical Parameters for Cogeneration plant. **[8]**

OR

**P.T.O.**

- Q6)** a) Explain steam turbine and gas turbine cogeneration system with schematic diagram. [10]  
b) Differentiate “Back Pressure Turbine” and “Extraction Condensing Turbine with suitable sketches. [8]

- Q7)** a) Explain the role of economizer in steam generation with schematic diagram. [10]  
b) What are the direct and indirect benefits of waste heat recovery? [7]

OR

- Q8)** a) Discuss waste heat recovery boilers? Explain the need and benefits? [10]  
b) What is a “heat pipe”? How does it work? [7]