

# 17425

16117

**3 Hours / 100 Marks**

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (6) Use of Steam tables, logarithmic, Mollier's chart is permitted.

**Marks**

1. a) **Attempt any SIX of the following:** **12**
- (i) What are the impurities present in water?
- (ii) Define priming and foaming.
- (iii) Define C.O.P. of refrigeration cycle.
- (iv) Define dryness fraction of wet steam.
- (v) Define enthalpy of superheated steam.
- (vi) What is Compressed Air?
- (vii) Give the names of thermic fluid used for heating and cooling of process fluid. (Any four)
- b) **Attempt any TWO of the following:** **8**
- (i) Compare Leolite and Lime soda process for water treatment. (any four)
- (ii) Define refrigeration effect and unit of refrigeration.
- (iii) Define enthalpy of water and enthalpy of evaporation.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) What components causes temporary and permanent hardness of water?
  - b) A refrigeration system is operated in between 40°C and -15°C. The capacity of machine is 10 tonnes find out C.O.P.
  - c) Explain formation of steam from water at constant pressure.
  - d) Define specific humidity and relative humidity.
  - e) Explain process for getting Instrumental Air in Industry.
  - f) What are the bad effect of scale and sludge formation in Boiler.
- 3. Attempt any FOUR of the following:** **16**
- a) Explain vapour compression refrigeration system with diagram.
  - b) Give application of steam trap and water level indicator in a boiler.
  - c) Explain humidification and dehumidification.
  - d) What are the types of cooling towers and explain any one with construction and working.
  - e) What are the application of compressed Air?
  - f) Write classifications of boilers.
- 4. Attempt any FOUR of the following:** **16**
- a) What is reverse osmosis process? Describe it.
  - b) What are the properties of ideal refrigerants?
  - c) Write comparison between water tube and fire tube boilers.
  - d) How to use psychometric chart for measurement of humidity?
  - e) Write construction and working of thermic fluid heater.
  - f) Write the applications of refrigeration.

**5. Attempt any FOUR of the following:****16**

- a) Give the classification of refrigerants.
- b) List the important boiler mountings and accessories.
- c) Write construction and working of economiser.
- d) Define humid heat and humid volume.
- e) Explain construction and working of babcock and wilcox boiler with neat labelled diagram.
- f) Define sterilization of water and list methods of sterilization of water.

**6. Attempt any TWO of the following:****16**

- a) Explain Ion-exchange process for water treatment.
  - b) Explain simple vapour absorption refrigeration system with diagram.
  - c) Explain Indian Boiler Act with respect to the following points:
    - (i) Boiler accident
    - (ii) Duties of chief inspector
    - (iii) Registration of boiler
    - (iv) Certificate of renewal
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