

# 22311

**23242**

**3 Hours / 70 Marks**

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Assume suitable data, if necessary.
  - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
  - (7) Use of Steam tables, logarithmic, Mollier's chart is permitted.

**Marks**

- 1. Attempt any FIVE of the following: **10****
- a) Define temporary and permanent Hardness of water.
  - b) List out types of steam.
  - c) Write the equipments used for suction of air in industries with it's capacity.
  - d) Define C.O.P.
  - e) Differentiate between primary and secondary Refrigerents.
  - f) Define:-
    - i) Absolute Humidity
    - ii) Relative Humidity
  - g) Write the uses of Cooling Towers.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) List out the methods used for removal of temporary and permanent Hardness.
  - b) Define thermic fluid and give its properties.
  - c) Distinguish between single stage and multistage air compressor's (any four)
  - d) Write construction of natural draft cooling tower with neat sketch.
- 3. Attempt any THREE of the following:** **12**
- a) Compare between cold lime Soda Process and Hot lime Soda process
  - b) Explain Caustic Embrittlement of Boiler
  - c) Write the function of any four accessories of boiler.
  - d) Write construction and working of scrubber.
- 4. Attempt any THREE of the following:** **12**
- a) Write down chemical reaction occurs in Zeolite process of water softening.
  - b) Explain boiler act with respect to the following points.
    - i) Boiler accident
    - ii) Transfer of boiler
  - c) Write classification of boiler and name any two mountings used on boilers.
  - d) Explain Air Dust collectors.
  - e) Explain the process of getting instrument air in industry.

- 5. Attempt any TWO of the following:** **12**
- a) Explain Li-Br Absorption System with neat diagram.
  - b) When machine has capacity of 240 Tonnes of refrigeration working at  $-5^{\circ}\text{C}$  to  $10^{\circ}\text{C}$   
Find cop and power requirement of machine.
  - c) In Chemical process of  $200\text{ m}^3$  of air per minute of  $15^{\circ}\text{C}$  Dry bulb temperature and 75% Relative Humidity. Find wet bulb temperature of air using psychrometric chart.
- 6. Attempt any TWO of the following:** **12**
- a) Write Selection criteria of good Refrigerents. Give classification of refrigerents.
  - b) With neat sketch write construction and working of Dehumidifire.
  - c) Explain with neat sketch construction and working of Babcock and wilcox Boiler.
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