

22311

23124

3 Hours / 70 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. Attempt any FIVE of the following : 10
- a) Define hard water and soft water.
 - b) Name any two Boiler mountings.
 - c) Give any two advantages of thermic fluid over steam.
 - d) State the uses of compressed air in industry.
 - e) Define dry bulb temperature and wet bulb temperature.
 - f) Define - Ton of Refrigeration
 - g) Name two units used for measuring hardness of water.

P.T.O.

- 2. Attempt any THREE of the following :** **12**
- a) Explain Hot lime soda process for water treatment.
 - b) Distinguish between single stage and multistage air compressors (any four)
 - c) Draw neat labelled diagram of any one water tube boiler.
 - d) Define primary and secondary refrigerants. Give two example of each.
- 3. Attempt any THREE of the following :** **12**
- a) Compare zeolite and lime soda process for water treatment. (Any four)
 - b) State any eight industrial uses of air.
 - c) Explain humidification and dehumidification.
 - d) Differentiate between water tube boiler and fire tube boiler. (Any four)
- 4. Attempt any THREE of the following :** **12**
- a) Describe the procedure for inspection of boiler.
 - b) Sketch and explain Economiser.
 - c) Explain the working of cyclone separator with labeled diagram.
 - d) State selection criteria for refrigerant.
 - e) List the types of cooling towers and explain any one with construction and working.
- 5. Attempt any TWO of the following :** **12**
- a) Explain Indian Boiler Act with respect to the following points.
 - i) Boiler accident
 - ii) Duties of Chief Inspector
 - iii) Registration of Boiler
 - 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 Ion-exchange process for water treatment.

6. Attempt any two of the following :**12**

- a) Explain following point with respect to problem in Boiler feed water
 - i) Scale and Sludge formation
 - ii) Priming and foaming
 - iii) Corrosion
 - b) Find the enthalpy, entropy and internal energy of 1 kg of steam at pressure of 10 bar when steam is dry and saturated.
 - c) The barometer read 760 mm of Hg the dry bulb temperature 25°C and wet bulb temperature is 15°C by using psychrometric chart determine.
 - i) Relative humidity
 - ii) Humidity ratio
 - iii) Dew point temperature.
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