

17425

11819

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. Attempt any TEN of the following :

20

- (a) Define Hard Water and Soft Water.
- (b) Give different sources of water.
- (c) Define C.O.P. of Refrigeration cycle.
- (d) Write the names of any four refrigerants used in Refrigeration cycles.
- (e) Write the names of any four Boiler mountings.
- (f) Give the names of any two Boiler Accessories.
- (g) Define D.B.T. & W.B.T.
- (h) List the different types of Cooling Towers.
- (i) Give any four uses of process Air in an industry.
- (j) List the names of different types of thermic fluids used for heating.
- (k) What is priming ?

- (l) What is the use of Steam Trap ?
- (m) Give the names of different types of Refrigeration cycles used in Refrigeration.
- (n) Define Enthalpy of Superheated Steam.

2. Attempt any FOUR of the following :

16

- (a) What is Reverse Osmosis Process ? Describe it.
- (b) Explain vapour Compression Refrigeration Cycle with neat diagram.
- (c) Give the classification of Boilers.
- (d) Define Specific humidity and Relative humidity.
- (e) Give the applications of compressed air in an industry.
- (f) Enlist the methods of removal of scale from Boiler.

3. Attempt any FOUR of the following :

16

- (a) Explain boiled corrosion caused by dissolved oxygen. How it can be prevented ?
- (b) Explain vapour Absorption Refrigeration cycle with neat diagram.
- (c) Draw the neat labelled diagram of Babcock-Wilcox Boiler.
- (d) Explain Natural draft Cooling Tower with neat sketch.
- (e) Explain the process of getting instrumental Air.
- (f) Give the application of Pressure gauge & Pressure Reducing valve in a Boiler.

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

- (a) Compare Lime-soda process & Zeolite process for water treatment. (Any four points)
- (b) What are the properties of ideal Refrigerants ?
- (c) Compare between Fire Tube Boiler & Water Tube Boiler. (Any 4 points)
- (d) Draw and explain Psychrometric chart of humidity measurement.
- (e) Explain Boiler Act with respect to the following points :
 - (i) Certificate of Renewal
 - (ii) Boiler Accidents
 - (iii) Boiler Repair
 - (iv) Duties of chief inspector
- (f) Explain about secondary refrigerants. Give one example.

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

- (a) Write the construction & working of an Economiser with neat sketch.
- (b) Give the classification of Refrigerants.
- (c) Write the reactions taking place with hard water in Lime-soda process.
- (d) Explain humidification & dehumidification.
- (e) What is thermic fluid heater ? Explain with neat sketch.
- (f) Draw the neat sketch of Cochran Boiler.

P.T.O.

6. Attempt any FOUR of the following :

16

- (a) Find the enthalpy, entropy of 1 kg of steam at a pressure of 10 bar, when steam is dry & saturated.
 - (b) Explain construction & working of water level indicator.
 - (c) Write the applications of Refrigeration.
 - (d) What components causes temporary & permanent hardness of water ?
 - (e) What are the effects of hard water when used for domestic purposes ?
 - (f) Explain the Zeolite process used for water treatment.
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