

315373

25226

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) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
(8) Use of Steam tables, logarithmic, Mollier's chart is permitted.

Marks

1. **Attempt any FIVE of the following :** **10**
- a) State the necessity of Air Conditioning.
 - b) Define air handling unit (AHU).
 - c) Describe how occupants load is calculated.
 - d) Explain concept of 'SHF'.
 - e) Explain the concept of "Base ventilation".
 - f) State the advantages of Hermetically sealed Air compressor.
 - g) Define the terms –
 - i) DPT
 - ii) WBD

P.T.O.

2. Attempt any THREE of the following : 12

- a) List any four desirable properties of insulating materials used in air conditioning system.
- b) Represent following psychrometric processes on psychrometric chart –
 - i) Sensible heating
 - ii) Cooling with dehumidification
- c) Explain with neat sketch working of flooded type evaporator.
- d) Sketch and explain extended plenum duct system for air distribution.

3. Attempt any THREE of the following : 12

- a) Explain with neat sketch thermostatic expansion valve.
- b) List the factors affecting human comfort.
- c) Explain in details any four losses in ducts.
- d) Explain Automobile Airconditioning system with sketch.

4. Attempt any THREE of the following : 12

- a) What factors are to be considered for duct designing.
- b) Explain working of centrifugal compressor with neat sketch.
- c) Differentiate between central and Unitary Airconditioning System.
- d) List out various supply air outlets used in air distribution system.
- e) Explain the concept of Variable Air Volume (VAV). How does it work ?

5. Attempt any TWO of the following : 12

- a) Estimate cooling load for a CAD/CAM laboratory of your institute.
- b) Air is dehumidified from an initial condition of 30°C DBT and 80% RH to 25°C DBT and 18°C WBT. Plot the processes on psychrometric chart and find out.
 - i) Sp. humidity at initial condition
 - ii) Dew point temp. at final condition
 - iii) Change in enthalpy during process.
- c) Explain with neat sketch year round air conditioning system.

6. Attempt any TWO of the following : 12

- a) Explain construction and working of scroll compressor.
 - b) Suggest the duct system for L shape building. Explain it with neat sketch.
 - c) Describe various sources of heat gain considered in calculation of cooling load for a class room.
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