

17470

**11920**

**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.

**Marks**

**1. Attempt any TEN of the following :**

**20**

- (a) State the units of “viscosity” and “density” of liquids.
- (b) Give the purpose of pipe fittings.
- (c) Give the expression for the “equation of continuity”.
- (d) State the working principle of centrifugal pump.
- (e) Define “thermal conductivity” and “thermal diffusivity”.
- (f) Define “heat transfer operation”.
- (g) State the difference between free and forced convection.
- (h) Define “radiation” & state its significance with respect to textile industry.
- (i) Distinguish between “absorption” and “adsorption”.
- (j) Define “molecular diffusion” and “eddy diffusion”.
- (k) Define “relative humidity” and “percent humidity”.
- (l) Define “dry bulb” and wet bulb” temperatures.
- (m) State the principle of “Ultra-filtration”.
- (n) Give the applications of filtration to textile industry. (Any Four)

- 2. Attempt any FOUR of the following :** **16**
- (a) Distinguish between “real and ideal fluids”.
  - (b) State Bernoulli’s equation and state its significance.
  - (c) Give the classification of flow measuring devices.
  - (d) Explain energy conservation in textile industry.
  - (e) State two basic laws in radiation.
  - (f) Define “crystallisation” and state its three applications in textile industry.
- 3. Attempt any FOUR of the following :** **16**
- (a) Explain the need for pumping of liquids.
  - (b) Explain Fourier’s law of heat conduction. State its application in textile industry.
  - (c) Explain the process of heat transfer by convection. State its application in textile industry.
  - (d) Explain the diffusion and capillary theory of drying.
  - (e) Explain the concept of mass transfer operation and diffusion.
  - (f) Describe various filter aids and filter media with suitable examples.
- 4. Attempt any FOUR of the following :** **16**
- (a) Explain the rheology of “Non Newtonian fluids”.
  - (b) Explain the concept of “Energy losses” and “Friction factor”.
  - (c) Explain the construction and working of centrifugal pump with a neat sketch.
  - (d) Explain the mechanism of heat flow through thick slab and thick cylindrical pipe.
  - (e) Explain the theory of “Distillation” and state its application in textile industry.
  - (f) Explain the principle and working of tumble drier.

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

- (a) Explain the importance of fluid flow studies to textiles.
- (b) Explain the working of venturimeter with a neat labelled diagram.
- (c) Explain the following terms :
  - (i) Latent heat
  - (ii) Specific heat
  - (iii) Sensible heat
  - (iv) Heat capacity
- (d) Explain the concept of “black body radiations”.
- (e) Describe the functioning of humidification operation and state its importance.
- (f) Describe the method of “reverse osmosis”. State its significance in textile industry.

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

- (a) Distinguish between compressible and incompressible fluids.
  - (b) Describe Reynold’s experiment for fluid flow through pipes.
  - (c) Explain the working of orifice meter with a neat sketch.
  - (d) Explain concept of heat transfer by “radiation”.
  - (e) Explain the principle and working of stinter.
  - (f) Explain the principle of membrane separation technique. State the advantages of the technique.
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