

17470

21819

3 Hours / 100 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any TEN of the following :

20

- (a) State the units of “viscosity” and “density”.
- (b) State the expression for the equation of continuity.
- (c) State various types of pipe fittings.
- (d) State the working principle of venturimeter.
- (e) Define “Specific heat” and “Sensible heat”.
- (f) Define “heat transfer operation”.
- (g) Define “forced convection”.
- (h) State Newton’s Law of Cooling.
- (i) Define “Molecular diffusion” and “Eddy diffusion”.
- (j) Distinguish between “absorption” and “adsorption”.

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- (k) Define “dry bulb” and “wet bulb”.
- (l) Define “absolute and relative humidity”.
- (m) State the principle of ultra-filtration.
- (n) Define membrane separation technique.

2. Attempt any FOUR :

16

- (a) State any two characteristics of real and ideal fluids.
- (b) State Bernoulli’s equation and write its significance.
- (c) Explain the working of Orificemeter with a neat sketch.
- (d) Explain heat flow through a thick cylindrical pipe.
- (e) Explain the concept of “black body radiation”.
- (f) State any four importance of humidification in textile mills.

3. Attempt any FOUR :

16

- (a) Explain the working and construction of centrifugal pump with a neat sketch.
- (b) Explain Fourier’s law of heat conduction with suitable examples.
- (c) Define “crystallization” and state its three applications in textile industry.
- (d) Explain the concept of “heat transfer” by radiation.
- (e) Explain “drying” as unit operation in textile industry.
- (f) State any four advantages of ‘micro filtration’ over ‘filtration’ in textile industry.

4. Attempt any FOUR :**16**

- (a) Distinguish between compressible and incompressible fluids with suitable example.
- (b) Describe Reynold's Experiment for fluid flow through pipes.
- (c) Explain the need for pumping of fluids. (any four)
- (d) Explain the process of heat transfer by convection. State its application in textile industry.
- (e) Explain energy conservation in textiles.
- (f) Define :
 - (i) evaporation
 - (ii) extraction
 - (iii) distillation
 - (iv) diffusion

5. Attempt any FOUR :**16**

- (a) Explain the rheology of Non-Newtonian fluids.
- (b) Explain the importance of fluid flow measurement in textile industry.
- (c) Explain the concept of heat transfer coefficient.
- (d) Explain the concept of mass transfer operation and diffusion.
- (e) Explain the principle and working of stenter.
- (f) State four applications of filtration to textile industry.

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6. Attempt any FOUR :**16**

- (a) Distinguish between real and ideal fluids with suitable examples of each.
 - (b) Explain the concept of energy losses and “friction factor”.
 - (c) Classify flow measuring devices.
 - (d) Explain heat transfer rate and heat transfer co-efficient.
 - (e) Explain the diffusion and capillary theory of drying.
 - (f) Define Osmosis and explain Reverse Osmosis.
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