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21314

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) 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) Write the expression for equation of continuity.
 - c) Write the working principle of venturimeter.
 - d) Classify the various flow measuring devices.
 - e) Define sensible heat and latent heat.
 - f) Define heat transfer operation.
 - g) What do you mean by “forced convection”?
 - h) What is “eddy diffusion”?
 - i) State any two applications of evaporation.

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- j) Define the terms “dry bulb” and “wet bulb” temperature.
- k) Explain the term “percent humidity” and “humidity”.
- l) Distinguish between micro and ultrafiltration.

2. Attempt any FOUR of the following: 16

- a) Write any four characteristics of Ideal fluid.
- b) State Bernoulli's equation and state its three significances.
- c) Explain the construction of venturimeter.
- d) Explain heat flow through thick cylindrical pipe.
- e) State any four applications of convection heat transfer to textile industry.
- f) Define distillation and write its three applications.

3. Attempt any FOUR of the following: 16

- a) Explain the terms:
 - i) Thermal conductivity and
 - ii) Heat transfer rate
- b) Explain the concept of “Black body radiation”.
- c) Distinguish between absorption and adsorption with suitable examples.
- d) What is membrane technology? State the advantages of membrane technology in textile industry.
- e) State four importance of humidification in textile mills.
- f) State four need for pumping of liquids.

4. Attempt any FOUR of the following: 16

- a) What are non Newtonian fluids? State its three properties.
- b) Explain Reynolds experiment for fluid flow through pipes.
- c) Explain construction of orifice meter with a neat sketch.
- d) State the difference between “thermal conductivity and thermal diffusivity.
- e) Explain the terms with example:
 - i) Diffusion coefficient.
 - ii) Molecular diffusion
- f) What is ultrafiltration? State its two applications.

5. Attempt any FOUR of the following: 16

- a) State any four importance of fluid flow studies to textiles.
- b) State different types of pipe fittings and state its four purposes.
- c) Write the statement of basic laws of radiation and state its two applications.
- d) Explain capillary theory of drying.
- e) Explain reverse osmosis in detail with a neat sketch.
- f) Write a note on “energy conservation” in textiles.

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

- a) Define fluid and density. State Newton's law of viscosity.
 - b) Explain the concept of "Friction factor".
 - c) Explain the working of centrifugal pump.
 - d) Define heat transfer coefficient and state Newton's law of cooling.
 - e) State any four applications of drying techniques to textile industry.
 - f) Explain the terms:
 - i) Filter media
 - ii) Filter aids
 - iii) Membrane separation
 - iv) Filtration.
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