17470

14115

3 Hours / 100 Marks **Seat No.** | | | | | | | | |

Instructions : (1) All Questions are *compulsory*.

(2) Answer each next main Question on a new page.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Answer any TEN : **10 × 2 = 20**

(a) Define Rheology.

(b) State general characteristics of Newtonian fluid.

(c) Define Reynold's number. Write its dimension.

(d) Define :

(i) Skin friction

(ii) Drag friction

(e) Classify, flow-measuring devices.

(f) How are volumetric flow rate and flow rate related ?

(g) Define latent heat of vaporization. Write its value for water.

(h) Define heat transfer coefficient. State its significance.

(i) State applications of convection mode of heat transfer in textiles.

P.T.O.

(j) Define :

(i) Absorption

(ii) Adsorption

(k) Classify, mass transfer operations.

(l) Define :

(i) Dew point

(ii) Absolute humidity

(m) State the factors, on which drying depend.

2. Answer any FOUR : **4 × 4 = 16**

(a) Explain importance of fluid flow studies to textiles.

(b) Explain working principle of a centrifugal pump.

(c) 'Heat is a form of energy'. Explain.

(d) Distinguish between :

Molecular diffusion and Eddy diffusion

(e) (i) Define :

(1) Dry bulb temperature

(2) Wet bulb temperature

(ii) Explain use of dry-and wet-bulb thermometer.

(f) Name two filter media. Explain their use in textiles.

3. Answer any FOUR : **4 × 4 = 16**

(a) Write equation of continuity. State meaning of abbreviations used.

(b) Explain energy conservation in textiles.

(c) Compare free-and forced-convection.

(d) Define distillation. Name three types of distillation.

(e) Explain principle of membrane separation technique.

(f) Distinguish between : Micro-filtration and Ultra-filtration.

4. Answer any FOUR : **4 × 4 = 16**

(a) (i) Define viscosity. Write its unit.

(ii) State Newton's law of viscosity.

(b) Compare orificemeter and venturimeter.

(c) Describe heat flow through a thick slab.

(d) Explain concept of black body radiation.

(e) Describe diffusion theory of drying.

(f) (i) Explain principle of reverse osmosis.

(ii) State applications of reverse osmosis in textile industry.

5. Answer any FOUR : **4 × 4 = 16**

(a) Graphically represent flow behaviour of :

(i) Pseudoplastic

(ii) Dilatant

(b) (i) Write purpose of pipe fitting.

(ii) Explain meaning of "equivalent length" of a fitting.

(c) Describe working of a centrifugal pump.

(d) Explain two basic laws of radiation.

(e) (i) Define :

(1) Super-saturated solution

(2) Crystallisation

(ii) State applications of crystallisation process in textiles.

(f) Explain importance of humidification in textile mills.

6. Answer any FOUR : **4 × 4 = 16**

(a) Define and give two examples each of :

(i) Compressible fluid

(ii) Non-compressible fluid

(b) Describe Reynold's experiment for fluid flow through a pipe.

(c) Explain importance of fluid flow measurement in textile industry.

(d) Explain need of thermal insulation. Name two thermal insulating materials.

(e) Describe process of heat transfer by radiation.

(f) Name types of driers used in textile industry. Draw a labelled diagram of any one drier.

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