

17470

21415

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) Figures to the right indicate full marks.

Marks

1. Answer any FIVE :

5 × 4 = 20

- (a) Explain characteristics of real fluids.
- (b) Define and write units of :
 - (i) Specific gravity, (ii) density, (iii) viscosity.
- (c) Classify flow-measuring devices.
- (d) Define : (i) sensible heat, (ii) heat capacity, (iii) thermal diffusibility
(iv) heat transfer coefficient.
- (e) Describe concept of 'black body radiation'.
- (f) Distinguish between : absorption and adsorption.
- (g) Describe capillary theory of drying.

2. Answer any TWO :

2 × 8 = 16

- (a) (i) Name types of pipe fittings. Explain their purpose.
 - (ii) Define Reynold's number. Write its mathematical form and its unit.
- (b) (i) Describe with a diagram, heat flow through a thick cylindrical pipe.
 - (ii) Explain 'Heat is a form of energy'.
- (c) (i) Draw a labelled diagram of wet and dry-bulb thermometer.
 - (ii) Explain importance of humidification in textile mills.

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- 3. Answer any TWO :** **2 × 8 = 16**
- (a) (i) State characteristics and rheology of Non-Newtonian fluids.
 - (ii) Define : (1) dilatants, (2) Pseudo-plastic. Represent their flow behaviour, graphically.
 - (b) Explain working principle of : (i) Centrifugal pump, (ii) Orifice meter
 - (c) (i) Describe convection mode of heat transfer.
 - (ii) State applications of convection mode of heat transfer in textile industry.
- 4. Answer any TWO :** **2 × 8 = 16**
- (a) Draw a labelled diagram of a venturimeter. Explain its working.
 - (b) (i) State and explain Fourier's law of heat conduction.
 - (ii) Name four 'thermal insulators'. Explain their use.
 - (c) (i) Explain two commercial applications of crystallization.
 - (ii) Define evaporation. State factors on which rate of evaporation depend.
- 5. Answer any TWO :** **2 × 8 = 16**
- (a) (i) Write equation of continuity. Explain its significance.
 - (ii) Describe concept of 'friction factor'.
 - (b) (i) State basic laws of radiation.
 - (ii) Describe heat-transfer by radiation.
 - (c) (i) Describe two applications of membrane separation technique to textile industry.
 - (ii) Explain working principle of 'reverse osmosis'.
- 6. Answer any FOUR :** **4 × 4 = 16**
- (a) Distinguish between : Compressible fluids and non-compressible fluids.
 - (b) Explain with examples 'forced convection'.
 - (c) Distinguish between : molecular diffusion and eddy diffusion.
 - (d) Describe working of a 'stenter'.
 - (e) Draw a labelled diagram of a dryer used in textile industry.
 - (f) Define and give two examples of : (a) filter aids, (ii) filter media.
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