17470

11819

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

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) Abbreviations used, convey usual meaning.
(6) Mobile Phone, Pager and any other Electronic Communication devices are ***not*** *permissible in Examination Hall.*

Marks

1. Answer **any five** : **(5×4=20)**

a) i) Define :
   1) density
   2) specific gravity
   ii) A liquid has density of 1.2 g/l at 30°C. Find its weight in kg/10 l.

b) Define critical Reynold's number and explain the significance of Reynold's number.

c) Explain as to why heat is considered as a form of energy.

d) Explain with examples, 'forced convection'.

e) Describe the process of 'Eddy diffusion'.

f) Define humidification and explain the process of humidification.

g) Explain the terms :
   i) ultra-filtration
   ii) micro filtration.

2. Answer **any two** : **(2×8=16)**

a) Describe Reynold's experiment, write its mathematical expression and derive its units.

b) i) Explain the terms :
   i) Sensible heat
   ii) Latent heat.
   ii) Draw a representative diagram and describe heat flow, through a thick cylindrical pipe.

c) i) State distinguishing features between 'absorption and adsorption'.
   ii) Explain 'theory of extraction' and state its two 'applications' in textile industry.

P.T.O.

Marks

3. Answer **any two** : **(2×8=16)**

a) Draw a neat sketch of centrifugal pump and explain its working.

b) i) Define : **2**
   1) Convection
   2) Radiation.

   ii) Explain their 'applications' in textile industry. **6**

c) i) Explain 'principle' of 'reverse osmosis'.

   ii) Explain 'factors' on which, rate of filtration depend.

4. Answer **any two** : **(2×8=16)**

a) i) Define and give two examples each, of
   1) real fluid
   2) ideal fluid

   ii) Explain and graphically represent :
   1) Dilatant flow
   2) Pseudo plastic.

b) i) Define 'heat transfer'. **1**

   ii) Define 'conduction'. State 'applications' of conduction, specific to textile industry. **3**

   iii) State and explain 'Fourier's law' of heat conduction. **4**

c) i) Describe 'capillary theory' of 'drying'.

   ii) Explain use of 'tumbler drier' in textiles.

5. Answer **any two** : **(2×8=16)**

a) i) Define 'surface tension'. Write its 'unit' and 'dimension'. **2**

   ii) Define 'viscosity'. Write its unit. State effect of 'temperature' on viscosity. **2**

   iii) State and explain 'Newton's law of viscosity'. **4**

b) i) Explain 'working principle' of a 'venturimeter'. **3**

   ii) Write stepwise 'procedure' of its 'use'. **5**

c) i) State 'factors' on which, 'rate of drying' depend. **2**

   ii) Enumerate 'applications' of drying techniques, specific to textile industry. **2**

   iii) Define : **4**
   1) Wet-and dry-bulb temperature.
   2) Relative-and absolute humidity.

6. Answer **any four** : **(4×4=16)**

a) i) Explain 'purpose' of 'pipe fittings'.

   ii) Name 'types' of pipe fittings.

b) i) Draw a labelled diagram of an 'orifice meter'. **3**

   ii) Where is orifice meter, 'used' ? **1**

c) State and explain 'Newton's law of cooling'.

d) State basic 'laws of radiation'.

e) i) Define 'crystalisation'. **1**

   ii) Explain specific instances where crystalisation is used in textile industry. **3**

f) Describe 'membrane separation' technique.
