No. of Printed Pages : 4
Roll No. .....

220643

4th Sem. / Chemical (Pulp & Paper)
Sub. Heat Transfer

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice Questions. All Questions are compulsory. (6x1=6)

Q.1 Which of the following is the mode of heat transfer in solids

a) Convection b) Conduction

c) Radiation d) None

Q.2 A perfect black body is an object that

a) Reflects all radiations b) Transmit all radiations

c) Absorb all radiations d) None

Q.3 The units of thermal conductivity is

a) w/m b) wm^0c

c) $w/m^{20}c$ d) $w/^0c$

Q.4 Which type of heat transfer is unaffected by the medium

a) Convection b) Conduction

c) Radiation d) None

Q5. In co-current flow heat exchanger

a) Both fluids flow in same direction

b) Fluids flow in opposite direction

c) Fluids are mixed

d) No fluids flow

Q.6 The main function of an evaporator is to

a) Increase pressure b) Concentrate solutions

c) Heat Air d) Removes impurity

SECTION-B

Note: Objective type questions. All questions are compulsory. (6x1=6)

Q.7 Write the mathematical relation of Fourier's law.

Q.8 Write the name of any two types of heat exchangers.

Q.9 Define emissivity.

Q.10 Give an example of radiation heat transfer.

Q.11 Write the full form of LMTD.

Q.12 What is the objective of insulation.

SECTION-C

Note: Short answer type Questions. Attempt any eight questions out of ten Questions. (8x4=32)

Q.13 Write a note on thermal conductivity.

Q.14 Define Prandtl and Grashoff number with their mathematical relations.

Q.15 Discuss the concept of LMTD in heat exchangers.

Q.16 State and explain Kirchhoff's law of radiation.

Q.17 Draw a neat sketch of double pipe heat exchanger.

Q.18 Explain the concept of horizontal tube type evaporator.

Q.19 Write a short note on dittus boelter's equation.

Q.20 What do you mean by scale formation and write the role of cleaning devices in heat exchanger.

Q.21 Explain the term insulation and write about of critical thickness of insulation for cylinders.

Q.22 Discuss the concept of Reflection, absorption and transmission in radiations.

SECTION-D

Note: Long answer questions. Attempt any two questions out of three Questions. (2x8=16)

Q.23 Discuss different feeding arrangements in multiple effect evaporator with neat diagram.

Q.24 With the help of neat diagram explain the construction and working of shell and tube heat exchanger.

Q.25 State and explain

a) Fourier's law

b) Stefan Boltzmann law