

- Q.27 Explain Fourier law of heat conduction.
- Q.28 What is fouling factor?
- Q.29 Define wein's displacement law.
- Q.30 Draw neat sketch of double pipe heat exchanger.
- Q.31 List various modes of feeding of black liquor in evaporator.
- Q.32 What is Dittus Boetter's equation.
- Q.33 Write a note on scale formulation.
- Q.34 Define critical thickness of insulation for cylinder.
- Q.35 Explain grey body.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Derive an expression of heat transfer through multilayer cylinder.
- Q.37 Explain in detail the construction & working detail of shell & tube heat exchanger with neat & clean diagram.
- Q.38 Write a short note on any two of the following
- Long mean area
 - Kirchoff's law
 - Emissive power
 - Physical significance of dimensionless number

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Roll No.

**4th Sem / Chemical (P&P), Chem. Engg.
(Spl.Paint Tech) Chem. Engg. (Spl. Polymer Engg.)
Subject:- Heat Transfer**

Time : 3Hrs.

M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 Choose sources of solar radiation.
- Sun
 - Moon
 - Mars
 - None
- Q.2 What is the unit of LMTD
- Meter
 - Litre
 - Centigrade
 - None
- Q.3 How many types of modes of heat transfer are used?
- One
 - Two
 - Three
 - Four
- Q.4 What is μ_{cp}/K ?
- Prandtl no.
 - Peclet no.
 - Stanton no.
 - Nusselt no.
- Q.5 Select type of fin.

- a) Longitudinal b) Horizontal
- c) Parallel d) None

Q.6 Why insulation is used?

- a) To permit flow of heat
- b) To prevent of flow of heat
- c) To increase pressure
- d) None

Q.7 What is the SI unit of thermal conductivity?

- a) w/m k b) Cal/m k
- c) J/sec k d) W / ft k

Q.8 For secular body the reflectivity is equal to ____

- a) 1 b) 2
- c) 3 d) 4

Q.9 When hot and cold fluid flow in the same direction in a heat exchange the flow is called

- a) Parallel b) Counter
- c) Cross d) None

Q.10 For fluid flow through pipe, Reynold's number up to 2300 indicative of

- a) Transition flow b) Turbulent flow
- c) Laminar flow d) None

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 What is the formula of heat flux?

Q.12 Give any one parameter on which forced convection depends

Q.13 What is the emissivity of black body?

Q.14 What insulation is used?

Q.15 Write any one purpose of using evaporators?

Q.16 Which evaporator is preferred for foaming liquids?

Q.17 Name any one material used for insulation.

Q.18 What is tube pitch?

Q.19 Expand TEMA

Q.20 Why baffles are used in heat exchangers?

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Explain steady state heat conduction.

Q.22 What is forced convection?

Q.23 Define heat transfer by conduction.

Q.24 Describe entrainment.

Q.25 What do you mean by heat loss from pipe?

Q.26 Write a note on dimensional analysis.