Q.33 What properties are required for a good insulating material ?

Q.34 Define critical thickness of insulation.

Q.35 What is the difference between black body and gray body ?

SECTION-D

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

Q.36 Derive the expression of heat transfer through a cylinder.

Q.37 Derive a relationship by dimensional analysis method for heat transfer coefficient 'h' for natural convection between a surface and fluid assuming that the coefficient 'h' is a function of the following variable: l = linear dimension of surface, d= density of fluid , m= viscosity of fluid, g= acceleration due to gravity, b = coefficient of cubical expansion of fluid, AT= temperature difference between the fluid and surface.

Q.38 Write short note on any two of the following:

a) Effect of temperature on thermal conductivity.
b) Physical properties of insulating material
c) Prandtl number
d) Emission in a gaseous medium.

Roll No. .....

3rd Sem / Chemical Engg. (P&P)

Subject:- Heat transfer - 1

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 What is the fastest way to transfer heat ?

a) Conduction b) Convention
c) Radiation d) None

Q.2 Boiling refers to a change from the _____

a) Solid to liquid phase
b) Liquid to a vapor phase
c) Vopor to a liquid phase
d) Liquid to a solid phase

Q.3 What is reynold's number?

a) Ratio of intent's force to viscous force
b) Ratio of viscous force to intent's force
c) Production of viscous force and intent's force
d) None

Q.4 A perfect black body_____

a) Absorbs all the incident radiations
b) Allows all the incident radiations
c) Reflects all the incident radiations
d) None

Q.5 The Prandtl number will be lowest for ____.

a) water b) Liquid metal
c) Aqueous liquid d) Tube oil

Q.6 The free convection heat transfer is significantly affected by _____.

a) Reynold's number b) Prandtl number
c) Stanton number d) Grashof number

Q.7 What is the unit of plank's constant ?

a) Joule/sec b) Joule.sec
c) Joule/meter d) None

Q.8 The substance whose emissivity & absorptivity are independent of wave length is called ____.

a) Black body b) White body
c) Gray body d) None

Q.9 Why is insulation used ?

a) To permit flow of heat
b) To prevent flow of heat
c) To reduce pressure
d) To increase pressure

Q.10 Choose driving force in heat transfer.

a) Time b) Temperature
c) Pressure d) Velocity

SECTION-B

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

Q.11 Mention any one example of convection.

Q.12 What is the concept of steady state heat transfer ?

Q.13 Define emissivity .

Q.14 Covert 0°F (degree Fahrenheit)in °C(degree centigrade).

Q.15 Write any one type of condensation.

Q.16 Define radiations .

Q.17 Give an example of absorption in a gaseous medium.

Q.18 Write the formula of heat conduction in a gaseous medium.

Q.19 State Wein's displacement law.

Q.20 What is one dimensional steady state heat conduction through a sphere ?

SECTION-C

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

Q.21 Name different modes of heat transfer. Explain each with explain.

Q.22 Differentiate steady state and unsteady state heat transfer.

Q.23 Explain fourier's law of heat conduction.

Q.24 Write a note on thermal conductivity of material.

Q.25 Describe one dimensional steady state heat conduction through a composite wall.

Q.26 List insulating material. Explain any one .

Q.27 Explain connective heat transfer in detail.

Q.28 Give the significance of Nusselt number of grasshof number.

Q.29 What is the empirical correlations for free and forced convection.

Q.30 Define evaporation.

Q.31 What do you mean by black body radiation ?

Q.32 Differentiate between film wise condensation and drop wise condensation.