Q.30 With the help of neat diagram explain the purge stream of material balance

Q.31 Calculate the average molecular weight of air

Q.32 Explain the Hess law of constant heat summation

Q.33 Define combustion, sensible Heat and latent heat

Q.34 Calculate the value of universal gas constant (R) in m^3 atm/k.mol.K

Q.35 Discuss any one of the following

1) Hear of combustion
2) Heat of reaction

SECTION-D

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

Q.36 2500kg of wet solids containing 70% solids by weight are fed to a tray dryer where it is dried by hot air . The final product obtained is found to contain 1 % moisture by weight calculate

(i) kg of water removed from wet solids

(ii) kg of product obtained

Q.37 Prove mole%=pressure%=volume%

Q.38 Discuss the concept of energy balance write steps of procedure to carry out energy balance

3rd Sem / Chem, P & P Chemical engineering
(Spl. Paint Tech.) Chem. Engg. (Spl. Polymer Engg.)

Subject:- Chemical Process Calculations / Ind. Chem cal.

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 Concept of material balance is based upon

a) Conservation of mass
b) Conservation of energy
c) Conservation of Momentum
d) Conservation of volume

Q.2 A reaction which liberates heat is called

a) Exothermic reaction
b) endothermic reaction
c) Neutral reaction
d) Autocatalytic reaction

Q.3 Full form of CGS system is

a) Central gross system
b) Centimeter gross system
c) Centimeter Gram second
d) None of above

Q.4 In ideal gas law R stands for

a) Rankin b) Universal gas constant
c) Role of catalyst d) Rate of reaction

Q.5 Relation between Cp and C_v is

a) $Cp-C_v=0$ b) $Cp+C_v=0$

c) $Cp=C_v$(D) d) $Cp-C_v=R$

Q.6 10 dm is expressed as

a) 100mm b) 100cm

c) 100m d) 100km

Q.7 Standard temperature in Kelvin is equal to

a) 298.15 degree kelvin

b) 273.15 degree kelvin

c) 25 degree kelvin

d) 0 degree kelvin

Q.8 Units of viscosity are

a) Kilogram b) Centimeter

c) Poise d) Kelvin

Q.9 $10^{o}C$ = ...K

a) 10 b) 283.15

c) 373.15 d) 0

Q.10 Cp is the heat capacity at

a) Common platform b) Constant Parameter

c) Constant pressure d) None of the above

SECTION-B

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

Q.11 Define mole .

Q.12 Write ideal gas equation

Q.13 State Dalton's Law

Q.14 Give any two examples of unit operation

Q.15 Write the molecular weight of H_2O

Q.16 What is latent heat ?

Q.17 One pound has _____ grams

Q.18 Define molarity

Q.19 Explain law of conservation of mass

Q.20 Define standard heat of formation

SECTION-C

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

Q.21 Define chemical engineering with its brief history

Q.22 Write the basic steps follows for a material balance calculation

Q.23 A natural gas has the following composition by volume CH_4=82%.C_2h_6=12%,N_2=6%. Calculate the composition by weight.

Q.24 70gm of NAOH are dissolved in water to prepare 500ml solution. Find the normality and molarity of the solution

Q.25 What is a recycle stream ? Describe with the help of diagram

Q.26 Drive the relation between Cp and C_v

Q.27 Write in brief about theoretical air and excess air

Q.28 Discuss the future prospects of chemical engineers

Q.29 Differentiate between unit operation and unit process with examples