(a) Mole % and Mole fraction.

(b) Mass % and mass fraction.

(c) Density of gas mixture.

(d) Ang molecular wf.

Q.4 Define chemical Engineering? Explain in detail about future and care or opportunities in chemical Engineering

Q.5 1000kg of wet solid material which contains 65 % solids by weight are fed to the two track dryer where it is dried by hot air. The final product found to contains 1 % moisture by weight calculate.

(a) Kg of water removed from wet material

(b) kg of product obtained.

Q.6 Describe the following:-

(i) Heat Capacity.

(ii) Sensible heat.

(iii) Latent heat.

(iv) Hess law.

(v) Amagat's law.

Q.7 Describe in detail about unit operations.

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3rd Sem. / Chem Engg., P&P, Spl, Paint Tech.

Subject : Chem. Process Cal. / Intro. Chem. Cal.

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

Q.1 a) What is molarity?

b) What is the unit of viscosity?

c) Define mole?

d) Write the ideal gas equation.

e) What is the unit of concentration.

f) What is chemical process?

g) What is Dalton's law?

h) Give any two examples of unit operation.

i) Define mass fraction?

j) What is latent heat?

k) Fill in the blanks :- 1°C = ...'k.

l) Expand MKS & SI system of units.

m) What is conduction heat transfer.

n) What is the molecular wt of H_2O.

o) Expand Cp.

p) Write the unit of pressure.

q) Unit of specific gravity.

r) Define latent heat of fusion.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

Q.2 i) What is purge system? Describe with diagram.

ii) What do you understand by weight fraction?

iii) Describe in brief about the future of chemical Engineer in any four fields.

iv) What you know about material without chemical Reactions. Give the examples also.

v) Discuss about the by pass system with neat & clean diagram.

vi) Calculate the volume occupied by 20 kg of cl_2 at a pressure of 100 kpa and 298k.

vii) Convert 130 kg/sec into lb/sec.

viii) A container have 200 kg NaoH in solid form. Find out the no. of moles of NaoH present in container.

ix) Define heat transfer? Also write about its parts.

x) Convert 97 Pa into N/m^2 & bar.

xi) Derive the ideal gas equation.

xii) A solid of 50 kg contains 37% moisture. Find out the water present in solid on weight basis if solid will be dried at 10% moisture.

xiii) Write in brief about theoretical air & excess air.

xiv) Write down about heat of formation.

xv) Describe about:-

(i) Mole fraction

(ii) Weight fraction

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.3 Describe about all of these:-