Q.29 Discuss recycle material balance with diagrams

Q.30 Convert 825 Btu/fthr into watt/m

Q.31 A mixture of H_2 and O_2 contains 25.1% H_2 by weight. Calculate average molecular weight of gas mixture.

Q.32 Briefly list the steps of procedure for carrying out material balance problems

Q.33 Define Henry's Law

Q.34 Write short note on theoretical air requirement and excess air

Q.35 Define standard heat combustionand latent heat

SECTION-D

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

Q.36 Write a short note on the following

a) Bypass and purge stream of material balance

b) Gross calorific value and Net Calorific Value

Q.37 Prove that for ideal gaseous mixture, Mole % = Pressure % = Volume %

Q.38 A single effect evaporator is fed with 5000 kg per hour of weak liquor containing 15% caustic by weight and is concentrated to get thick liquor containing 40% by weight caustic calculate (a) kg per hour of water evaporated (b) kg per hour of thick liquor obtain

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

Subject:- Chem. Process Calculations / Ind. Chem Cal.

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 Write Molecular weight of calcium oxide

a) 56 b) 200

c) 46 d) 72

Q.2 Name n in ideal gas equation

a) Universal Gas constant

b) Henry constant

c) no of kg moles

d) None of these

Q.3 Write SI unit of length

a) Joule b) Dyne

c) Newton d) Meter

Q.4 1 horsepower is equal to_____ Watts

a) 749 b) 746

c) 723 d) 726

Q.5 Unit of power in SI System

a) Joule b) liter

c) watt d) Meter

Q.6 Write SI unit of density

a) Joule b) liter

c) kg/m^3 d) Newton

Q.7 Formula for density is

a) mXv b) m/v

c) m+v d) m-v

Q.8 Energy balance is based on the law of conservation of _____

a) force b) mass

c) energy d) Density

Q.9 In ideal gas law P stands for

a) Pressure b) volume

c) temperature d) none of these

Q.10 molecular weight of water is

a) 60 b) 70

c) 29 d) 18

SECTION-B

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

Q.11 Write SI unit of viscosity

Q.12 Write down the SI unit of energy

Q.13 Write molecular weight of sodium carbonate

Q.14 Expand CGS

Q.15 Define Standard heat of formation

Q.16 Define molarity

Q.17 Define mass fraction

Q.18 Define unit operation

Q.19 Convert 725 Btu into joule

Q.20 Define partial pressure

SECTION-C

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

Q.21 State and explain Hess's law of heat summation with one example

Q.22 Calculate kg moles present in 250 gram of sodium carbonate

Q.23 Explain Boyle's Law and Charles's Law

Q.24 Write down job opportunities of a chemical engineer

Q.25 How many kilogram atoms of carbon which weighs 86 kg

Q.26 Calculate value of R in kcal / (kmol.k)

Q.27 Calculate weight of $3m^3$ of carbon dioxide gas at a temperature of 35^oC and 101.325 kPa pressure

Q.28 Why net Calorific Value is less than gross Calorific Value. Explain