Q.31 What is chemical engineering write about the future prospects of chemical engineers.

Q.32 Calculate the average molecular weight of air

Q.33 How many moles of H_2SO_4 will contains 64 kg of sulphur

Q.34 Explain the terms Molarity and Normality with their Mathematical relations

Q.35 Discuss the following

a) Charle's law b) Amagat's law

SECTION-D

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

Q.36 An evaporator is fed with 1500 kg/hr of the solution containing 10% caustic by weight and is concentrated to get thick liquor containing 40% weight caustic. Calculate the water evaporated in kg/hr

Q.37 Discuss the concept of material balance and write the steps of procedure to carry out material balance.

Q.38 Explain in detail about Hess's law of constant heat summation with one example.

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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 1 bar is almost equal to_____ atmosphere

a) 1 b) 10
c) 100 d) 1000

Q.2 Number of gram moles of solute dissolved in one litre of solution is called its

a) Equivalent weight b) molarity
c) molality d) normality

Q.3 Concept of_____ is based upon law of conservation of mass

a) energy balance b) Heat transfer
c) material balance d) mass transfer

Q.4 A reaction which release heat is called

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

Q.5 Average molecular weight of air is about

a) 21 b) 23

c) 29 d) 100

Q.6 1 torr is equivalent to

a) 1 mm Hg b) 1 Pascal

c) 1 atm d) 1 mm

Q.7 pH of an alkaline solution is

a) 7 b) >7

c) <7 d) 0

Q.8 In C_v 'V' stands for

a) Velocity b) Voltage

c) volume d) None

Q.9 R in ideal gas law means for

a) Rankin

b) Universal gas constant

c) Role of catalyst

d) Rate of reaction

Q.10 Expansion of MKS system is

a) material kilogram system

b) Mass kelvin system

c) Mass kilogram second

d) None of the above

SECTION-B

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

Q.11 One BTU has_____ Joules.

Q.12 Units of density are_____

Q.13 Expand CGS

Q.14 Write one example of unit process.

Q.15 Define mass fraction.

Q.16 One mile has_____ kilometers

Q.17 Energy balance is based on the principles of_____

Q.18 Boiling is an example of unit_____

Q.19 Define latent heat

Q.20 1 ^{o}C = _____K.

SECTION-C

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

Q.21 What is a recycle stream? Describe with the help of diagram

Q.22 Prove mole% = Pressure % = volume%

Q.23 Write the steps to be followed for energy balance calculation

Q.24 Calculate the value of universal gas constant (R) in m^3 atm/ kmol k

Q.25 Derive the relation between C_P and C_V

Q.26 Define heat of formation and heat of reaction.

Q.27 Describe the concept of theoretical and excess air in combustion

Q.28 Define unit operation and unit process with two examples of each

Q.29 With the help of neat diagram explain the concept of purge stream

Q.30 A solid of 50 kg contains 37% moisture. Find out the water present in solid on weight basis if solids are dried to 10% moisture