09/10/15

VCD CHEMISTRY P-I F.Y.B.Sc SEM-I MARKS 75 TIME 2.5HRS

NOTE: i) All the questions are compulsory.

ii) Figures to right indicate full marks.

iii) Use of non programmable calculator/logtable is allowed.

Q 1) Answer the following (Any four) **(20M)**

A) *Write a note on different types of process in therrnodynamics.*

B) Derive integrated rate equation for first order reaction.

C) Write a note on Carnot cycle

D) Explain order and molecularity of chemical reaction

E) Derive equation for half life period of first order reaction.)

F) Define the term : i) system ii) surrounding iii)boundary iv)Enthalpy v) Heat capacity

G) Give the classification of boundary

H) Calculate q , w ,change in internal energy when one mole of monoatomic gas expand adiabatically against constant external pressure of 1.5 atm from a volume of 4 L to16 L at 300 K.

Q 2) Answer the following (Any four) **(20M)**

A) Discuss any two electromagnetic spectrum and give their uses

B) What are the steps involved in chemical analysis?

C) How is silk obtained? Give a brief account of the same

D) Define the term: i) wavelength ii) frequency. iii) wave number and give the relation between these terms.

E) What are the polymers and monomers? Give the classification of polymers based on their structure.

F) Distinguish between the term homopolymer and copolymer and give an example of each

G) Describe chemical method and instrumental method of analysis and write its advantages.

H) Explain the terms i) Vibrational transition ii) Rotational transition

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Q 3) Answer the following (Any four) **(20M)**

A) Define the terms: i) concentration ii) solute iii) solvent iv) normality v) molality.

B) How many significant figures are present in the following

1) 1.237 2) 0.012340 3) 5643 4) 400 5) 3.2×10^{-51}

C) Express our answer in definite number of significant figure

1) 42.3×2.61 2) $0.61 + 42.1$ 3) $23.2 \div 4.1$ 4) $0.14 + 1.2243$ 5) $47.2 - 0.01$

D) Explain significant figures in detail.

E) Calculate the molality of solution containing 18 g of can sugar $C_{12}H_{22}O_{11}$ dissolved in 125 g of water. (C- 12 , H- 1 , O – 16).

F) Calculate the molarity of solution containing 4.9g of Sulphuric Acid in 500 cm^3 of solution . (H – 1 , S – 32 , O – 16).

G) Determine the mole fraction of both constituent in a solution containing 46g of water and 56g of glycerine. (Mol.Wt. of glycerine -92 , O- 16, H- 1).

H) Calculate weight of HCl will required to prepare 250cm^3 0.1 N Solution of HCl.

Q 4) Answer the following (Any three) **(15M)**

A) State zeroth and second law of thermodynamics

B) What are the applications of analytical chemistry.

C) Explain the first law of Thermodynamics. Derive mathematical expression for it.

D) Express your answer in correct number of significant figure

1) $1.423 + 0.4393$ 2) $560.0 + 0.114$ 3) $563.231 - 14.0$ 4) 27.37×3.10 5) $0.11 + 0.014$

E) Define the terms : i) Mole fraction ii) Formality iii) Molarity iv) ppm v) PPb

F) 1) What are Gamma rays and give its uses?

2) Define electromagnetic spectrum.