V.P. AND R.P.T.P.SCIENCE COLLEGE, VALLABH VIDYANAGAR
B.Sc.(SEMESTER - III)
PHYSICAL CHEMISTRY
US03CCHE22
INTERNAL EXAMINATION

Date : 07.10.2019 **Time : 3:00 to 4:15 pm**

Q- 1 Choose one most appropriate response out of four provided to you. **(05)**

(i) The SI units of viscosity are
(a) $Kgm^{-2}\ S^{-}$ (b) $Kgm^{-}\ S^{-}$ (c) $KgM^{-}\ S^{-}$ (d) $Nm^{-2}\ S$

(ii) By convention, the standard heat of formation of all elements is assumed to be
(a) zero (b) negative (c) positive (d) infinity

(iii) The lowering of vapor pressure of NaCl, $CuSO_4$ and K_2SO_4 are in the ratio of
(a) 1:1:1.5 (b) 3:2:1 (c) 1.5:1:2.5 (d) 1.5:1:1

(iv) Which one is not a colligative property?
(a) osmotic pressure (b) temperature (c) elevation of boiling point (d) molality

(v) The degree of dissociation α = _____.
(a) Λ_c / Λ_m (b) Λ^0 / Λ (c) Λ / Λ^0 (d) Λ_m / Λ_c

Q- 2 Explain the surface tension of a liquid. Discuss the methods for measurement of surface tension. **(05)**

OR

Q- 2 Establish relation between critical constants and van der Waal's constants. **(05)**

Q- 3 Derive Kirchhoff's equation. **(05)**

OR

Q- 3 Prove that work is not a state function. **(05)**

Q- 4 Explain osmosis and osmotic pressure. Derive an equation correlating osmotic pressure with solution concentration. **(05)**

OR

Q- 4 What is depression of freezing point? Derive the relation between depression of freezing point and molality. **(05)**

Q- 5 What is ionic mobility? Derive an expression for the determination of ionic mobilities of ions in solution from the measurement of conductance at an applied voltage. **(05)**

OR

Q- 5 ExplainVan't Hoff factor. How the degree of dissociation of an electrolyte can be determined from the colligative property of its solution? **(05)**