

V.P. & R.P.T.P.SCIENCE COLLEGE
(SEMESTER – VI) INTERNAL EXAMINATION

Physical Chemistry: US06CCHE05

Time: 11:00 p.m. to 12:30 p.m.

Date: 10-03-2017, Friday

Total Marks: 25

Q – 1 : Choose the correct option from the following.(Multiple choice question) [03]

- (i) The ratio of the electrical capacity of the condenser containing the substance to that with vacuum between the plates is called _____.
- (a) dielectric polarization (b) dielectric constant
(c) dipole moment (d) induced polarization
- (ii) Kinetic activity of particles suspended in a liquid is called _____.
- (a) tyndall effect (b) visibility (c) Brownian movement (d) zeta potential
- (iii) The frequency of IR absorption due to stretching or bending vibration by a molecule depends on
- (a) relative masses of atoms (b) the force constant of the bonds
(c) the environment of atoms (d) all of the above

Q – 2 : Answer the following. (Any two)

- (i) State the factors influencing vibrational coupling.
- (ii) Define: (a) Peptization (b) Coagulation
- (iii) Explain that the p-dichlorobenzene is non-polar while p-dihydroxybenzene is polar in character.



[04]

Q–3 Derive an expression for determination of molecular parameters of diatomic polar molecule from pure rotational spectra. [06]

OR

Q–3 Describe various modes of vibration of polyatomic molecule giving suitable example. [06]

Q–4 (a) Derive the Clausius–Mosotti equation showing the relationship between the polarizability of a molecule and the dielectric constant of the medium. [06]

OR

Q–4 (a) Which type of molecules show optical activity. Explain with suitable example what the meaning of laevo and dextro rotatory substance is. [03]

- (b) Calculate the refractive index of acetone at a temperature at which its density is 0.791 g cm^{-3} . (Given: R_M value for C = $2.591 \text{ cm}^3/\text{g atom}$, H = $1.028 \text{ cm}^3/\text{g atom}$, O in $>\text{C}=\text{O}$ = $2.573 \text{ cm}^3/\text{g atom}$ respectively.) [03]

- Q-5 (a) Describe the chief methods for the preparation of colloidal solution by Mechanical dispersion and Electrical dispersion. [06]

OR

- Q-5 (a) Explain the electro kinetic properties of colloids in detail. [06]

