

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION-2016

B.Tech(Civil) IInd Semester

COURSE CODE: 10B11CL212

MAX. MARKS: 15

COURSE NAME: Chemistry

COURSE CREDITS: 4

MAX. TIME: 1 HR

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q1. Explain the following:

5(1 each)

- Conductance of a metal decreases with increase in temperature.
- Polar character of covalent bonds.
- Role of cohesive and adhesive forces at the interface of any solution.
- Ethanol-water mixture exhibit non-ideal behavior.
- Glycerol is more viscous than ethanol.

Q2(a). If edge length of unit cell is 404.9 pm. Calculate the value of d_{111}/d_{220} . 1

(b). The equivalent conductance of 1.028×10^{-3} N acetic acid is $48.15 \text{ ohm}^{-1} \text{ cm}^2 \text{ eq}^{-1}$ at 298 K. Its equivalent conductance at infinite dilution is $390.6 \text{ ohm}^{-1} \text{ cm}^2 \text{ eq}^{-1}$. Calculate the dissociation constant of acetic acid. 1

(c). Why equivalent conductance for a weak electrolyte solution cannot be determined experimentally? Suggest a law to determine it indirectly. 3

Q3(a). Elaborate how Langmuir isotherm provides a useful insight into the pressure dependence of the extent of surface adsorption. 3

(b). When the initial concentration is changed from 0.50 to 1.0 mole litre⁻¹, the time of half-completion for a certain reaction is found to change from 50 s to 25 s. Calculate the time taken for the concentration to be reduced to 20% of the initial value. 2