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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T1 EXAMINATION- Feb. 2020

B.Tech (Civil)

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. Differentiate between: 4

(a). Integrated rate law and differential rate law.

(b). Crystal systems and Bravais lattices

(c). Molecular crystals and Metallic crystals

(d). Adsorption isotherms and Adsorption isobars.

Q2(a). What happens when a drop of HCl is added to a mixture of sodium acetate and acetic acid? 2

(b). Calculate the EMF of the following Zn-Ag cell at 22.3°C if the concentration of $ZnSO_4$ and $AgNO_3$ are 0.191 M and 0.0289 M respectively. Given that $E^{o}\ Zn^{2+/}Zn$ = - 0.76V and $E^{o}Ag+/Ag$ = +0.80V. 2

Q3(a). Calculate the density of Mo which forms body centered cubic crystal in which the distance between the centers of closest atoms is 274pm. Atomic mass of Mo is 95.94. 2

(b). Why equivalent conductance for a weak electrolyte solution cannot be determined experimentally? Suggest a law to determine it indirectly. 2

Q4. In the Arrhenius equation for a certain reaction, the values of A and Ea are 4 X $10^{13}s^{-1}$ and 98.6 $kjmol^{-1}$ respectively. The reaction is of first order. At what temperature will its half –life period be 10 minutes? 3