JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
MAKEUP EXAMINATION APRIL 2018
B.TECH (CIVIL) II SEM

COURSE CODE: 10B11CL211
COURSE NAME: CHEMISTRY **MAX. MARKS: 25**
COURSE CREDIT: 4 **Max. Time: 1Hr 30 Min**

Note: Attempt all questions. Draw diagrams wherever necessary.

1. What are the types of cubic crystal? Explain with diagram how atomic radius of a cubic lattice of all types of cubic crystals is calculated? Calculate the value of Avagadro number from the data. Density of NaCl = 2.165 g cm^{-3}, distance between Na^+ and Cl^- ions in NaCl crystal 281 pm. [5]
2. Define Bragg law. Derive Bragg equation for X-ray diffraction of crystals. At what glancing angle would the first order diffraction from (110) plane of KCl be observed, using X-ray of wavelength of 154 pm? The dimension of the unit cell is 315 pm. [5]
3. What are colloids? Write a note on the physical, colligative, mechanical, optical and electrical properties of a colloid. [5]
4. (a) Find the molality of a solution containing a non-volatile solute, it its vapour pressure is 2% below the vapour pressure of pure water. (b) Benzene (C_6H_6) and toluene (C_7H_8) form a nearly ideal solution. At 313 K, the vapour pressure of pure benzene is 150 mmHg and of pure toluene 50 mmHg. Calculate the vapour pressure of a mixture of these two containing equal masses of 313 K. (c) Calculate the molality of water in pure water. [5]
5. What Pilling-Bedworth rule? Explain the mechanism of wet or electrochemical corrosion and differentiate dry and wet corrosion. [5]