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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
T2 EXAMINATION APRIL 2018  
B.TECH(CIVIL) II SEM

**COURSE CODE: 10B11CL211**

**COURSE NAME: Chemistry**

**MAX. MARKS: 25**

**COURSE CREDIT: 4**

**MAX. TIME: 1hr 30m**

*Note: All questions are compulsory. Draw diagrams wherever necessary*

1. Sodium metal crystallizes in body centered cubic (BCC) lattice with the cell edge  $a = 4.09 \text{ \AA}$ . What is the radius of sodium atom? [1]
2. What is Van't Hoff factor? [1]
3. The vapour pressure of pure benzene at certain temp is 680 mmHg. A non volatile non electrolyte solid weighing 2.175g is added to 156g of benzene. The vapour pressure of solution is 650 mmHg. What is the molecular weight of solid substance? [2]
4. 2g of NaOH was dissolved in one litre of solution containing one mole of acetic acid and one mole of sodium acetate. Find pH of the resulting solution. The dissociation constant for acetic acid is  $1.8 \times 10^{-5}$ . [2]
5. Calculate the molarity and molality of a solution made by mixing equal volumes of 45% by weight of  $\text{H}_2\text{SO}_4$  (density 1.368g/ml) and 60% by weight of  $\text{H}_2\text{SO}_4$  (density 1.510g/ml). [2]
6. How temperature affects solubility and solution process? In comparison to pure solvent what are the changes observed in the colligative properties of the solution? [4]
7. What are complexometric titrations? Explain its application and name the indicator used for complexometric titrations. [4]
8. List the types of protective coating used for corrosion control and explain metallic coating used to protect corrosion. [5]
9. Define colloid and explain how colloids can be purified? [4]