Dr Gopal

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- May-2018

B.Tech (Civil) II Semester

COURSE CODE: 10B11CL212 MAX. MARKS: 35

COURSE NAME: Chemistry

COURSE CREDITS: 4 MAX. TIME: Two Hours

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

1. Explain step by step the mechanism of following reactions by taking suitable examples. [2.5x3=7.5][CO II, III]
   a. Nucleophilic substitution reaction
   b. Elimination reaction
   c. Free radical mechanism of polymerization

2. Answer the following [2x5=10][CO V]
   a. What are refractories? What are their applications?
   b. How number average weight of polymer is determined? How will you obtain Nylon 6:6?
   c. What are the advantages of vulcanization of rubber? Give representative structural unit of vulcanized rubber
   d. Explain Huckle rule for determining aromatization by taking suitable example.
   e. If HBr is added to alkene in presence of peroxide Anti Markovnikov's product is formed. Explain.

3. Explain the principle of column chromatography. List the various steps to be undertaken in this method. [2.5] [CO V]

4. Write a short note on complexometric titrations. [2] CO IV]

5. Name the major air pollutants. How carbon monoxide affects oxygen transport to human tissues? What are the harmful effects of sulphur dioxide? [3] [CO VI]

6. What are colloids? How colloidal solutions are prepared? Explain in detail. [3] [CO II]

7. What are the factors influencing corrosion? Write a note on water line corrosion. [3] [CO II]

8. Calculate the lattice energy of KCl crystal. [S = 90.9 KJ/mol; I.E. = 418.7 KJ/mol; E.A. = -348.7 KJ/mol; D = 240 KJ/mol; ΔH_f = - 440.3KJ/mol] [2] [CO I]

9. The density of KBr is 2.73g/m^3. The length of the unit cell is 654ppm. Show that KBr has a fcc structure. [$N_A = 6.023 \times 10^{23}$ mol^{-1}; atomic mass K = 39; Br = 80] [2] [CO I]