LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc.** DEGREE EXAMINATION – **PLANT BIOLOGY & ADV. ZOOLOGY**

THIRD SEMESTER – **APRIL 2012**

# CH 3104 - CHEMISTRY FOR BIOLOGISTS - I

Date : 28-04-2012 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

**Part A**

**Answer ALL questions. (10 x 2 = 20 Marks)**

1. What is intermolecular hydrogen bonding? Give an example.
2. Why the bond angle of water is reduced to 104° when compared with the normal tetrahedral angle?
3. Calculate the pH of 0.001N HCl.
4. Define the rate of a reaction.
5. Mention any two differences between order and molecularity.
6. Give any two examples for enzymes used in industries.
7. Draw the resonance structures of phenol.
8. Define Brownian movement.
9. How is maleic acid differentiated from fumaric acid?
10. Why is chlorophenol more acidic than phenol?

**Part B**

**Answer any EIGHT questions. (8 x 5 = 40 Marks)**

1. Explain the hybridization and shape of PCl5.
2. State the postulates of Werner’s theory of coordination compounds.
3. Draw the structure of chlorophyll and explain any three functions.
4. Explain any five requirements for a primary standard solution.
5. Differentiate homogeneous and heterogeneous catalysis with examples.
6. Derive an expression for the rate constant of a first order reaction.
7. What is peptisation? Explain with an example.
8. Explain any two methods for the separation of a racemic mixture.
9. Discuss the optical isomerism of lactic acid.
10. Explain the types of polymerization with an example for each.
11. What is electro-osmosis? Explain.
12. Explain the vulcanization of rubber in detail.

**Part C**

**Answer any FOUR questions. (4 x 10 = 40 Marks)**

1. Explain the optical isomerism in square planar and octahedral complexes.
2. What are buffer solutions? Derive Henderson equation for an acidic buffer.
3. Explain electrophoresis in detail.
4. Define steric acceleration and steric hindrance. Explain with an example for each.
5. How are the following prepared?

i) nylon ii) terylene iii) neoprene iv) PVC

28. Explain in detail the optical isomerism of tartaric acid.

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