LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **PLANT BIOLOGY AND PLANT BIOTECHNOLOGY**

THIRD SEMESTER – **NOVEMBER 2018**

CH 3104– CHEMISTRY FOR BIOLOGISTS - I

Date: 03-11-2018 Dept. No. Max. : 100 Marks

Time: 01:00-04:00

Part-A

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

1. Draw the crystal structure of sodium chloride.
2. What is dipole-dipole interaction?
3. State the principle of law of volumetric analysis.
4. Define molarity of a solution.
5. Mention any two enzymes used in the industries.
6. What is molecularity of a reaction?
7. Write any two applications of colloids.
8. Mention the role of peptising agents in the preparation of colloids.
9. Cite an example for +I and –I groups.
10. Draw the resonance structure of phenol.

Part-B

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

11. Discuss the factors affecting the ionic bonding.
12. Explain the theory of hydrogen bonding.
13. Describe the structure and functions of haemoglobin.
14. What are buffer solutions? Mention examples for acidic and basic buffers.
15. Illustrate the geometrical isomerism exhibited by square planar complexes with relevant examples.
16. Define order of a reaction. Write examples for zero and first order reactions.
17. Compare homogeneous and heterogeneous catalysis with examples.
18. Explain electro osmosis with a neat diagram.
19. What are lyophilic and lyophobic colloids? Cite examples.
20. Discuss the optical isomerism exhibited by lactic acid.
21. Elaborate the classification of high polymers with examples.
22. Write the manufacture of nylon and Teflon.

Part-C

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

23a. Explain Werner's theory of coordination complexes.

b. Distinguish between inter and intra molecular hydrogen bonding with suitable examples. **(6+4)**

24a. Explain the hybridisation and structure of NH_3 and H_2O based on VSEPR theory.

b. Write the prerequisites of primary standard substances. **(6+4)**

25. Derive an expression for a second order reaction, A+ B $\rightarrow$P, with equal concentrations of A and B.
26. Discuss the optical and kinetic properties of colloids.
27. Differentiate the following with suitable examples.
    (i) Addition and condensation polymerisation
    (ii) Thermosetting and thermoplastics **(5+5)**

28a. Describe any three methods of separating racemic mixtures.

b. Write a note on vulcanisation of rubber. **(6+4)**

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