



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – ADVANCED ZOOLOGY AND PLANT BIOLOGY

THIRD SEMESTER – APRIL 2018

CH 3104- CHEMISTRY FOR BIOLOGISTS - I

Date: 05-05-2018
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

Part-A

Answer ALL questions.

(10 x 2= 20)

1. What is meant by ionisation energy?
2. Write the hybridisation of PCl_5 and BF_3 molecules.
3. A solution is prepared by mixing 0.02 moles of water and 0.2 moles of ethanol ($\text{C}_2\text{H}_5\text{OH}$). Find the mole fraction of ethanol.
4. Define ionic product of water.
5. Write Michaelis-Menten equation for enzyme catalysis. Mention the terms involved in it.
6. Find the pH of 0.01 N nitric acid.
7. What is Tyndall effect?
8. Why trimethylamine is less basic than dimethyl amine?
9. What are thermosetting plastics?
10. Draw the resonance structures of phenol.

Part-B

Answer any EIGHT questions.

(8 x 5= 40)

11. What are primary and secondary valencies according to Werner's theory?
12. Discuss the types of hydrogen bonding with suitable examples.
13. Explain the geometrical isomerism exhibited by square planar complexes.
- 14a. State the law of volumetric analysis.
 - b. Calculate the molarity of a solution when 6.3 g of oxalic acid (M.W. = 126) is dissolved in 500 ml of distilled water. (2+3)
15. What are primary and secondary standard substances? Cite examples.
16. Derive the expression for rate constant of a first order reaction.
17. Discuss the application of enzymes in various fields.
18. Explain electrophoresis with a neat diagram.
19. Discuss the kinetic properties of colloids.
20. Describe any two methods of resolution of racemic mixtures.
21. What are step growth and chain growth polymerisation reactions?
22. Explain the classification of high polymers with examples.

Part-C

Answer any **FOUR** questions.

(4 x 10= 40)

- 23a. Describe the structure of NH_3 and H_2O on the basis of VSEPR theory.
- b. Explain the crystal structure of sodium chloride. (6+4)
- 24a. Discuss the structure and functions of chlorophyll.
- b. What are buffer solutions? Mention examples for acidic and basic buffers. (5+5)
25. Distinguish between the following with suitable examples.
- (i) Homogeneous and heterogeneous catalysis
- (ii) Order and molecularity of a reaction (5+5)
- 26a. Explain lyophilic and lyophobic colloids with examples.
- b. Write a note on application of colloids. (6+4)
- 27a. Discuss the types of inductive effect with relevant examples.
- b. Explain the optical isomerism exhibited by lactic acid. (5+5)
28. Name the monomers of the following polymers and mention their uses.
- (i) nylon-6,6 (ii) LDPE (iii) Teflon (iv) Buna-S (v) neoprene
