LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – ADV. ZOO. AND BIOTECH. & PLANT BIOLO.

FIRST SEMESTER – NOVEMBER 2015

CH 1100 - CHEMISTRY FOR BIOLOGISTS - I

Date : 11/11/2015   Dept. No.   Max. : 100 Marks
Time : 01:00-04:00

Part-A

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

1. Distinguish accuracy from precision.
2. Define R_f value.
3. Why is the boiling point of ethanol higher than methoxy methane?
4. What are ambidentate ligands? Give an example.
5. Calculate the normality of 4.2 g of NaOH dissolved in water to give 5 litre of the solution.
6. What is buffer solution? Give an example.
7. State the difference between the rate and rate constant of a chemical reaction.
8. What are heterogeneous catalysts? Give an example.
9. Define the term saponification.
10. What are anti-vitamins? Give an example.

Part-B

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

11. Discuss the role of inventory control and labeling in safe handling and storage of chemicals.
12. How is paper chromatographic separation carried out?
13. Explain the quantitative method to check the presence of peroxide linkage in ethers. How will you remove the peroxide linkage in ethers?
14. Discuss the geometrical isomerism exhibited by square planar complexes.
15. Explain the hybridization and geometry of the following molecules i) CH_4 ii) NH_3.
16. Describe the hydrogen bonding in carboxylic acids and in nucleic acids.
17. What are the criteria for a primary standard? Cite an example for primary and secondary standard.
18. Prove that $K_a \times K_b = K_w$.
19. Derive the expression for first order rate constant.
20. Differentiate between order and molecularity of a chemical reaction.
21. What are the importance of vitamin C and E?
22. Draw the structure of adrenaline and mention its functions.

Part-C

Answer any FOUR questions. $(4 \times 10 = 40)$

23. Explain the principle of thin layer chromatography with an example. Mention its applications.

24a. What are the types of error encounted in analytical measurements?   **(5)**

  b. Explain the crystal structure of KCl.   **(5)**

25a. Draw the structure of chlorophyll and explain its functions.   **(5)**

  b. Explain the factors influencing the formation of ionic bond.   **(5)**

26a. Give the definitions of a) molarity and b) ppm   **(5)**

  b. Calculate the pH when K_w is 6.5×10^{-14} $mol^2 dm^{-6}$.   **(5)**

27. Discuss Michaelis-Menten mechanism and the kinetics of enzyme catalyzed reactions.

28. Draw the structure and discuss the functions of the following

                    (i) Thyroxin   (ii)Vitamin A

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