LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

U.G. DEGREE EXAMINATION – **ALLIED**

THIRD SEMESTER – **APRIL 2025**

16/17/18UCH3AL03 – GENERAL CHEMISTRY FOR BIOLOGY-I

Date: 03-05-2025   Dept. No.   Max. : 100 Marks
Time: 01:00 PM - 04:00 PM

SECTION A

Answer ANY FOUR of the following   **4 × 10 = 40**

1. (a) Discuss the absolute and relative errors in chemical analysis.
    (b) What are antidotes? Mention their significance.   (6+4)
2. (a) Explain the principle and applications of column chromatography.
    (b) What are accuracy and precision?   (5+5)
3. State and explain the postulates of Werner's theory.
4. (a) Describe the salient features of structure of NaCl.
    (b) What are van der Waals forces?   (5+5)
5. (a) What are buffer solutions? Explain their significance with two examples.
    (b) How is 2 litres of 0.1N NaOH solution prepared?   (7+3)
6. Differentiate the following:
    (i) End point and Equivalence point (ii) Primary and Secondary standards
7. (a) How are rate constant and rate law related?
    (b) Derive the rate expression for the first order chemical reaction. (4+6)
8. Discuss the structure, sources and functions of vitamin D and E.

SECTION B

Answer ANY THREE of the following   **3 x 20 = 60**

9. Discuss the following: i) Storage and handling of chemicals in Laboratory
                           ii) Methods of eliminating and minimizing errors
10. (a) Discuss the structure and function of chlorophyll.
    (b) Explain the characteristics of ionic compounds.
    (c) Describe the hydrogen bonding involved in (i) acetic acid (ii) DNA and RNA.   (6+6+8)
11. (a) Explain the procedure for solvent extraction.
    (b) Predict the hybridization and geometry of the following molecules i) NH_3 ii) CH_4.
    (c) Discuss the geometrical and optical isomerism in octahedral complexes with suitable examples.
                                                                           (5+8+7)
12. (a) Explain the following methods of expressing concentration: Molarity and ppm.
    (b) Write a note on the principle of volumetric analysis.
    (c) Derive Henderson-Hasselbach equation and mention their significance.   (4+8+8)
13. (b) Distinguish between the following:
       (i) Order and molecularity   (ii) Homogenous and heterogeneous catalysis.
    (a) Write the factors affecting the rate of a reaction.   (12+8)
14. (a) Explain the structure and functions of the following:
       (i) Adrenaline   (ii) Sex hormones   (iii) Vitamin A
    (b) Discuss the hydrolysis of fats.   (15+5)

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