LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **MATHEMATICS**

FOURTH SEMESTER – **APRIL 2023**

UCH 4401 – APPLIED CHEMISTRY FOR MATHS

Date: 04-05-2023 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

Part-A

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

1. Why care should be taken while handling ethers in the laboratory?
2. Write the role of a universal antidote in a laboratory.
3. A sample of ground water is found to contain 50 ppm of arsenic. What is the amount of arsenic in milligrams in 5.0 kg of ground water taken from the well?
4. Mention a suitable indicator and the colour changes observed in the titration between Oxalic acid and Sodium hydroxide.
5. What is meant by isoelectric point? Cite an example.
6. Write the sources and deficiency diseases of ascorbic acid.
7. Distinguish between deodorants and antiperspirants.
8. Mention any four ingredients of shampoo.
9. List BIS specifications of potable water.
10. How does water disinfected by ozone?

Part-B

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

11. List the general rules to be followed in storing and handling chemicals.
12. Explain the types of errors encountered in analytical measurements.
13. What are material safety data sheets? Mention their importance in laboratories.
14. What are primary and secondary standards? Mention the prerequisites for primary standards.
15. Calculate the molarity and normality of sulphuric acid (molecular mass = 98 g mol^{-1}) solution containing 84 g of sulphuric acid in 400 mL of water.
16. Illustrate any one classification of amino acids with examples.
17. Describe any two tests for the identification of carbohydrates.
18. What is meant by iodine value? How can it be determined?
19. Discuss the cleansing action of soap.
20. List out the ingredients and their functions of any one kind of cream.
21. Explain reverse osmosis method to purify water.
22. What are the causes of acid rain? How does it affect the environment?

Part-C

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

23. Seven different samples of chromium alloy were analysed for chromium and were found to contain 7.48, 7.23, 7.62, 7.28, 7.29, 7.39 and 7.35 % of chromium. Calculate the mean, average deviation, standard deviation and coefficient of variation.
24. Distinguish the following:
    (i) Accuracy and Precision (ii) Soaps and Detergents
    (iii) Temporary and Permanent hardness
25. What are complexometric titrations? Mention the role of Eriochrome balck-T in complexometric titrations.
26. Discuss the sources, functions and deficiency diseases of fat-soluble vitamins.
27. Elaborate the rights and responsibilities of a consumer.
28. Define water pollution. Discuss the causes, effects and prevention of water pollution.

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