B. Sc. DEGREE (C.B.C.S.) EXAMINATION, NOVEMBER 2022
(2022 Admissions (regular) 2021 Admissions (Improvement / Supplementary), 2020, 2019, 2018, Admissions Supplementary)
SEMESTER I - CORE COURSE (CHEMISTRY)
CH1B01B18 - GENERAL AND ANALYTICAL CHEMISTRY

Time : 3 Hours   **Maximum Marks : 60**

Part A

I. Answer any Ten questions. Each question carries 1 mark   **(10x1=10)**

1. Recognize the SI Unit of time (a) Second (b) Minute (c) Hour.

2. Working in the laboratory, a student finds the density of a liquid to be 1.83 g/cc. The accepted value for the density of the liquid is 1.877 g/cc. Calculate the student's percent error?

3. Name the base unit of electric current.

4. "All scientific statements are falsifiable". State true or false.

5. State modern periodic law.

6. Indicate the contribution of an electron in the (n-1)th shell to the value of shielding constant for an electron in np orbital of (n)th shell of an atom.

7. Cite the element with highest electronegativity.

8. Define the term elution.

9. State Nernst's distribution law.

10. In permanganometric titrations, Hydrochloric acid should not be used to provide acidic media. Examine the reason.

11. Define co-precipitation.

12. List any two applications of column chromatography.

Part B

II. Answer any Six questions. Each question carries 5 marks   **(6x5=30)**

13. Calculate the a) Mean b) Median and c) Standard deviation of the following values: 84, 86, 82, 84, 85, 86, 87.

14. Define systematic errors? Report methods to reduce them.

15. Explain the terms valency and oxidation number. d-block elements have variable oxidation states. Describe.

16. Explain the following methods of determination of equivalent mass a) Hydrogen displacement method b) Oxide formation method.

17. Explain Fajan's Rule with suitable examples.

18. Explain briefly the principle and process of crystallization. Compare the effect of slow vs. rapid cooling in crystallization.

19. Discuss acid base titrations.

20. Recall briefly on column chromatography. Describe the characteristics of adsorbent and solvent which can be used in column chromatography.

21. Compute the volume of 6M HCl and 2M HCl that should be mixed to get one litre 3M HCl.

Part C

22. Describe methods of detection and minimization of systematic errors.

23. Elaborate on indeterminate errors.

24. Devise a method for the estimation of Barium as Barium Sulphate in a given analyte solution.

25. Construct a method for the determination of Iron as Fe_2O_3.