25I104S (Pages: 2) Name: .....

Reg.No: .....

FIRST SEMESTER M.Sc. INTEGRATED GEOLOGY DEGREE EXAMINATION, NOV. 2025

(CBCSS)

CC23CHE1IC01 - GENERAL CHEMISTRY

(Chemistry)

(2023, 2024 Admissions - Supplementary/Improvement)

Time : 2.00 Hours Maximum : 60 Marks

Credit : 2

Part A (Short answer questions)

Answer ***all*** questions. Each question carries 2 marks.

1. Define molality of a solution.
2. 200ml of water is added to 50ml of a 0.85N solution of HCl. What is the normality of the diluted solution.
3. What are redox titrations? Give an example.
4. What is meant by quantization of angular momentum of an electron postulated in Bohr's theory?
5. What are the geometries associated with (i) sp^3 hybridization and (ii) sp hybridization?
6. Calculate the bond order of O_2 molecule on the basis of its MO configuration
7. Bi-210 decays by β-emission. What is the product formed and in which group of the periodic table will it lie?
8. Explain the term mass defect.
9. Explain the term isotopes with suitable examples.
10. What are metalloenzymes?
11. What is the oxidation state and coordination number of Fe in myoglobin?
12. What is chlorophyll?

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer ***all*** questions. Each question carries 5 marks.

13. Explain electronic concept of oxidation and reduction.
14. Explain the principle of double burette method used in titrimetry with a suitable example.
15. Write a short note on the different types of bonds found among substances.

16. Write a short note on the applications of lattice energy determination.

17. Illustrate with suitable examples the role of radioisotopes as tracers.

18. Briefly explain radiocarbon dating.

19. Explain sodium potassium pump with a schematic diagram.

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any ***one*** question. The question carries 10 marks.

20. Explain the principle regarding the choice of suitable indicators in different acid-base titraions.

21. State and explain the postulates of the VSEPR theory. How can you apply the theory to predict the shapes of ammonia and water?

(1 × 10 = 10 Marks)

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