25I102 (Pages: 2) Name : ….....

Reg. No : .....

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

(FYIP)

CC25UCHE1MN107 – BASIC INORGANIC CHEMISTRY AND METTALURGY

(Chemistry – Minor Course)

(2025 Admission – Regular)

Time: 2.0 Hours Maximum: 70 Marks

Credit: 4

Part A

Answer ***all*** questions. Each question carries 3 marks.

1. Mention three differences between a sigma bond and a pi bond. [Level:2] [CO1]
2. Write the electronic configuration of Li, Cr, Cu. [Level:3] [CO1]
3. Sketch the shapes of Px, Py, and Pz orbitals. [Level:2] [CO1]
4. Explain the variation of electron affinity down a group. [Level:2] [CO2]
5. Which has a higher ionization enthalpy - Mg or Al? Why? [Level:3] [CO2]
6. Discuss the terms absolute error and relative error with regard to an analytical determination. [Level:2] [CO3]
7. Give the structural formula of EDTA. What is its important use? [Level:2] [CO3]
8. Describe redox titrations with two suitable examples. [Level:2] [CO3]
9. Compare and contrast the terms mineral and ore. [Level:2] [CO4]
10. What reagent is used for leaching gold from gold ore? Give the corresponding equations. [Level:3] [CO4]

(Ceiling: 24 Marks)

Part B (Paragraph questions)

Answer ***all*** questions. Each question carries 6 marks.

11. State the Heisenberg's uncertainty principle and discuss its significance. [Level:2] [CO1]
12. Describe the bonding in ethylene and the shape of the molecule on the basis of hybridization. [Level:3] [CO1]
13. Explain the variation of atomic radius along a period and down a group. [Level:2] [CO2]
14. Discuss the factors that influence the electronegativity of elements. [Level:2] [CO2]
15. Describe the principles of iodimetric and iodometric titration. [Level:2] [CO3]
16. Give an account of the theories of acid-base indicators and explain. [Level:2] [CO3]

17. Discuss the classification of steels. [Level:2] [CO4]
18. Illustrate the term smelting with a suitable example. [Level:2] [CO4]

(Ceiling: 36 Marks)

Part C (Essay questions)

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

19. Discuss briefly the principles underlying the separation of cations into groups in qualitative analysis. [Level:2] [CO3]
20. Explain the processes involved in the extraction of iron from haematite. [Level:2] [CO4]

(1 × 10 = 10 Marks)

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