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FIRST SEMESTER UG DEGREE EXAMINATION, NOVEMBER 2025

(CUFYUGP)

CHE1MN 102- BASIC INORGANIC AND BIO-INORGANIC CHEMISTRY

2024 Admission onwards

Maximum Time :2 Hours	Maximum Marks :70

Section A

All Questions can be answered. Each Question carries 3 marks (Ceiling : 24 Marks)

1	What is Moseley's contribution to the periodic table?
2	Define ionization enthalpy and explain its variation across a period.
3	Explain the concept of oxidation number with examples.
4	What is the role of metal ions in enzyme activity?
5	Write a short note on the transport of CO_2 in blood.
6	Describe the structure of chlorophyll and its metal center.
7	Explain the biological importance of zinc.
8	Draw the structure of cis platin and oxaliplatin.
9	What are the effects of mercury toxicity in humans?
10	Mention two biological functions of cobalt.

Section B

All Questions can be answered. Each Question carries 6 marks (Ceiling : 36 Marks)

11	Describe the Bohr model of the atom and its limitations.
12	Explain the concept of quantum number.
13	Discuss the electronic configuration of transition elements (atomic number 21-30) .
14	Predict the shapes of XeF_4, SF_6, and IF_7 using VSEPR theory.
15	Define molarity and normality. Calculate the normality of a solution containing 5.3 g of Na_2CO_3 in 250 mL solution.
16	Explain the principle and procedure of complexometric titration using EDTA.
17	Derive the relation between solubility and solubility product of AgCl and $BaCl_2$
18	A solution contains 0.2 M NaOH. Explain the concept of molarity and calculate the mass of NaOH present in 2litres of this solution.

Section C

Answer any ONE .Each Question carries 10 marks (1x10=10 Marks)

19	Explain hybridization in PCl_5 and SF_6. Include orbital diagrams and geometry.
20	Explain the redox titration and indicator used. A 20mL sample of $FeSO_4$ requires 20 mL of 0.1 N $KMnO_4$ for oxidation. Calculate the amount of $FeSO_4$ present. (atomic mass of Fe=56, S=32, O=16).