QP Code: D 112443	**Total Pages:2**	**Name:**
		Register No.

FIRST SEMESTER UG DEGREE EXAMINATION, NOVEMBER 2024

(CUFYUGP)

CHE1MN 102: BASIC INORGANIC AND BIO-INORGANIC CHEMISTRY

2024 Admission onwards

Maximum Time :2 Hours **Maximum Marks :70**

Section A

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

1	Analyze the electron configuration of helium atom and identify any violations of the Pauli exclusion principle.
2	Determine the electron configuration of an atom (atomic number = 50) based on the Aufbau principle.
3	How does atomic radius change across a period and down a group in the periodic table? Explain the reasons for these trends.
4	How does valency change across a period and down a group?
5	Define ionization enthalpy. How does it change across second period?
6	How is the mole concept used to relate mass, moles, and number of particles?
7	Calculate the molality of a solution prepared by dissolving 18 g of glucose ($C_6H_{12}O_6$) in 500 g of water.
8	What is the primary role of iron in biological systems?
9	Describe the steps involved in the cycle of the sodium-potassium pump.
10	What is the role of ATP hydrolysis in the pump's function?

Section B

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

11	What are the major successes of the Bohr model?
12	What experimental evidence supports de Broglie's hypothesis?
13	Describe microanalysis. What are its advantages?
14	Explain the four types of quantum numbers. What does each one represent?
15	A 100 mL solution of 0.5 M HCl is diluted to 500 ml. What is the final concentration of the solution?
16	A 25 mL sample of an unknown concentration of HCl solution is titrated with 0.1 M NaOH. The endpoint is reached after adding 20 mL of NaOH. What is the concentration of the HCl solution? Suggest a procedure for the experiment.
17	Describe the structure of hemoglobin.
18	What are the roles of copper, zinc and magnesium in biological systems?

Section C	
Answer any ONE. Each Question carries 10 marks (1×10 = 10 Marks)	
19	Explain the Bohr model of the atom. What are its key postulates?
20	Discuss the significance of volumetric analysis techniques in modern chemistry, highlighting their applications in various fields, theory and various indicators used.