

QP Code: D132570		Total Pages:1	Name:
			Register No.
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	Define Moseley's periodic law and explain its significance in the development of the modern periodic table.		
2	Compare atomic radius and ionic radius with Na and Na ⁺ .		
3	Explain the inert pair effect with reference to group 13 and 14 elements.		
4	What role do metal ions play in biological systems? Give two examples.		
5	Write a short note on the structure and function of hemoglobin.		
6	Explain the significance of chlorophyll in photosynthesis.		
7	Describe the sodium-potassium pump and its biological importance.		
8	Discuss the toxicity of lead and mercury in biological systems.		
9	What is the role of zinc in enzymatic functions?		
10	Write the structure and therapeutic importance of cisplatin.		
Section B			
All Questions can be answered. Each Question carries 6 marks (Ceiling : 36 Marks)			
11	Derive the expression for de Broglie wavelength and explain its significance in atomic structure.		
12	Write the electronic configuration of the elements with atomic number 12, 20, 24, 25, 29 and 30.		
13	Apply VSEPR theory to predict the shapes of SF ₄ , XeF ₂ , and NH ₄ ⁺ .		
14	Calculate the bond order of O ₂ and CO using molecular orbital theory. Comment on their magnetic properties.		
15	Define molarity, molality, and normality. Calculate the molarity of a solution containing 5.85 g of NaCl in 250 mL of solution.		
16	Explain the principle of acid-base titration. How is the endpoint detected?		
17	Describe the separation of cations using common ion effect and solubility product.		
18	A solution contains 0.1 M HCl. 25 mL of this solution is diluted to 100mL. Calculate the molarity diluted solution.		
Section C			
Answer any ONE .Each Question carries 10 marks (1x10=10 Marks)			
19	Compare valence bond theory and molecular orbital theory with reference to bonding in N ₂ and F ₂ . Include diagrams and bond order calculations.		
20	A 100mL sample of oxalic acid requires 25 mL of 0.1 N KMnO ₄ for complete oxidation. Calculate the amount of oxalic acid present. Explain the redox titration involved and the role of indicators..		