

Reg No:.....

K24FY 1421 (C)

Name :.....

First Semester FYUGP Chemistry Examination
NOVEMBER 2024 (2024 Admission onwards)
KU1DSCCHE115 (BASICS OF STRUCTURAL and
ANALYTICAL CHEMISTRY)
(DATE OF EXAM: 6-12-2024)

Time : 90 min

Maximum Marks : 50

Part A (Answer any 6 questions. Each carries 2 marks)

1. What are the n , l and m values for an electron in the $2s$ orbital? 2
2. Draw and explain the molecular geometry of SF_6 using VSEPR theory. 2
3. What type of hybridization occurs in acetylene (C_2H_2)? Explain. 2
4. What is a hydrogen bond, and which elements are most commonly involved? 2
5. Among the complexes $[Co(NH_3)_6]Cl_3$, $[Co(NH_3)_5Cl]Cl_2$, $[Co(NH_3)_4Cl_2]Cl$ and $[Co(NH_3)_3Cl_3]$, which does not give a precipitate with $AgNO_3$ solution? 2
6. What is normality and write expression to find the normality? 2
7. What are the basic components of safe laboratory practices? 2
8. Explain the first aid to be administered to a victim of electric shock. 2

Part B (Answer any 4 questions. Each carries 6 marks)

9. What are quantum numbers? Discuss the significance of each quantum number. 6
10. a) Describe the shape and bond angles in methane.
b) Explain the shape of ethane and how it differs from ethylene. 6
11. a) Explain the bonding in ethylene molecule on the basis of hybridization.
b) Briefly explain the basis of Molecular Orbital Theory 6
12. What are ligands? Explain different types of ligands with examples. 6
13. Discuss the theory of acid-base indicators. 6
14. Write note on laboratory safety signs. 6

Part C (Answer any 1 question(s). Each carries 14 marks)

15. (a) How is the hydrogen spectrum explained based on Bohr's theory? 7
(b) Explain the merits and demerits of the long form of the periodic table. 7
16. (a) Discuss the application of complexes in analytical chemistry. 7
(b) Describe Werner's coordination theory and its application in explaining bonding in the formation of $Co(III)$ amine compounds. 7