

BACHELOR'S DEGREE EXAMINATION, OCTOBER 2025  
2025 ADMISSIONS REGULAR  
SEMESTER I - MAJOR (CHEMISTRY )  
CH1DSCA01B24 - Fundamentals of Chemistry-I

Time : 1.5 Hours

Maximum Marks : 50

**Part A**

Answer all questions. Each question carries 1 mark.

(1x10=10)

1. Identify de Broglie equation. [CO1,Understand]
2. State Pauli's Exclusion Principle. [CO1,Remember]
3. Splitting of spectral lines in the presence of electric field is called ..... [CO1,Understand]
4. Define hybridization. [CO2,Remember]
5. State the significance of a curved arrow in organic reactions. [CO2,Remember]
6. Define the term catenation. [CO2,Remember]
7. Define homolytic bond fission with an example. [CO3,Remember]
8. Electron gain enthalpy of Fluorine is lower than Chlorine. Identify the reason. [CO4,Understand]
9. Identify the elements classified under the category of the representative elements in the periodic table.

- a. s and d block elements
- b. s and p block elements
- c. s and f block elements
- d. d and f block elements

[CO4,Understand]

10. Predict the property of the Fluorine to attract the bonded electrons of the covalent bond is known as

- (a) Electron affinity
- (b) Ionisation potential
- (c) Electronic attraction
- (d) Electronegativity

[CO4,Apply]

**Part B**

Answer any 2 questions from the bunch of CO1. Each question carries 5 mark.

(5x2=10)

11. Explain azimuthal quantum numbers and the shapes and orientations of the s, p and d orbitals. [CO1,Understand]
12. Explain the photoelectric effect. [CO1,Understand]
13. Explain the main postulates of Bohr model of atom and discuss hydrogen spectrum. [CO1,Understand]

**Part B**

Answer any 2 questions from the bunch of CO2. Each question carries 5 mark.

(5x2=10)

14. Explain how hybridisation helps in understanding the bonding and geometry of carbon compounds. [CO2,Understand]
15. Describe the Characteristics of hybridisation. [CO2,Understand]
16. Explain catenation and the factors responsible for the exceptional behaviour of carbon. [CO2,Understand]

### Part B

Answer any 2 questions from the bunch of CO4. Each question carries 5 mark.

(5x2=10)

17. Explain the concept of covalent bond and provide examples for single, double and triple covalent bond formation. [CO4,Understand]
18. Differentiate ionization energy and electronegativity. [CO4,Understand]
19. The elements of the second period of the Periodic Table are given below:

**Li Be B C N O F**

- Predict the reason for the decrease in atomic radii from Li to F.
- Identify the most metallic and non-metallic elements.
- Discuss the trend in ionization energy along this period.
- Discuss the trend in electron gain enthalpy along this period.
- Identify the most electropositive element in this group.

[CO4,Apply]

### Part C

Answer any 1 question from the bunch of CO3. Each question carries 10 mark.

(10x1=10)

20. Discuss **electron displacement effects** (inductive, resonance, and hyperconjugation) with suitable examples. [CO3,Understand]
21. Explain the preparation and structure of free radicals with suitable examples. Describe why benzyl free radical is more stable than methyl free radical. [CO3,Understand]