

BACHELOR'S DEGREE EXAMINATION, OCTOBER 2025
2025 ADMISSIONS REGULAR
SEMESTER I - MINOR - C (CHEMISTRY)
CH1DSCB101B24 - Fundamentals of Chemistry-I

Time : 1.5 Hours

Maximum Marks : 50

Part A

Answer all questions. Each question carries 1 mark.

(1x10=10)

1. Predict the number of nodes in 2s orbital. [CO1, Understand]
2. Recall the minimum energy required to eject electron from the surface of the metal. [CO1, Understand]
3. Predict the value of Bohr's radius for the given value of $n=2$. [CO1, Understand]
4. State bond polarity. [CO2, Understand]
5. Predict the geometry of carbocation. [CO3, Understand]
6. Define electron displacement effect. [CO3, Understand]
7. Identify the hybridisation of carbocation. [CO3, Understand]
8. Recall multiple covalent bonds. [CO4, Remember]
9. Give one example each for molecules having ionic bond and covalent bond. [CO4, Understand]
10. Give the oxidation number of Sulphur in H_2SO_4 . [CO4, Understand]

Part B

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

(5x2=10)

11. Differentiate the concept of orbit and orbital. [CO1, Understand]
12. Explain the reason for filling electrons in 2p orbital before 3s orbital. [CO1, Understand]
13. Predict the shapes of s, p, and d orbitals with diagrams. [CO1, Understand]

Part B

Answer any 2 questions from the bunch of CO3. Each question carries 5 mark.

(5x2=10)

14. Explain the reason for the high stability of tertiary carbocation than primary carbocation. [CO3, Understand]
15. Describe resonance effect with suitable examples. [CO3, Understand]
16. Outline, a) the +I effect with suitable examples. b) the structure and hybridisation of free radicals. [CO3, Understand]

Part B

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

(5x2=10)

17. Calculate the oxidation number of Sulphur in a) $H_2SO_4^{2-}$ b) $Na_2S_2O_3$ c) H_2S . [CO4, Apply]
18. Explain the applications of lattice energy and the factors that influence it. [CO4, Apply]
19. Compare electron affinity and electronegativity. [CO4, Understand]

Part C

Answer any 1 question from the bunch of CO2. Each question carries 10 mark.

(10x1=10)

20. Explain the concept of hybridisation by specify sp , sp^2 and sp^3 hybridisations. [CO2,Understand]

21. "Electronegativity is the reason for bond polarity". Describe the statement with various examples. [CO2,Understand]