

B.Sc.
CHEMISTRY

I Semester End Examination March/April 2022

Analytical, Physical, Inorganic and Organic

Chemistry - I

Course Code: CHE1DSC01
Time: 2 hours

QP Code: 1014
Total Marks: 60

- Instructions:**
1. Question paper has three parts. Answer all the three parts.
 2. Write chemical equations and diagrams wherever necessary.

PART A

Answer any five of the following questions. Each question carries two marks (5 x 2 = 10)

1. Mention any two precautions to be taken while handling concentrated acids
2. State Heisenberg's uncertainty Principle
3. What are d-block elements? Give their general outer shell electronic configuration
4. What is heterolytic cleavage? Give an example
5. Differentiate between accuracy and precision
6. How do you convert ethene to ethane?

PART B

Answer any four of the following questions. Each question carries five marks (4 x 5 = 20)

7. Define sampling. Discuss sampling methods for solids (5)
8. a. Write the Schrodinger's time independent wave equation and indicate the terms in it
b. What is the significance of ψ^2 (3 + 2)
9. a. Mention the characteristics of s-block elements
b. Size of Na^+ is less than that of Na atom. Explain (3 + 2)
10. a. Explain electromeric effect with an example
b. State and illustrate Huckel's rule (3 + 2)
11. a. What is a primary standard? Give two examples

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QUESTION PAPER**

- b. Define electron gain enthalpy of an element (3 + 2)
12. a. State and explain Hund's rule of maximum multiplicity
- b. Between chloroacetic acid and acetic acid which is stronger and why? (3 + 2)

PART C

Answer any three of the following questions. Each question carries ten marks. (3 x 10 = 30)

13. a. What are determinate errors? Discuss different types of determinate errors
- b. Define: (i) Normality (ii) Molarity
- c. Calculate the Range of the following data:
2,4, 7, 4, 11, 6, 16 (4+4+2)
14. a. Write the significance of principal and magnetic quantum numbers
- b. What are Eigenvalues and Eigenfunctions?
- c. Explain screening effect (4+4+2)
15. a. Mention the factors affecting ionization enthalpy
- b. Discuss the hydrides of group 13 and group 15
- c. Mention any two uses of silicon carbide (4+4+2)
16. a. Write the mechanism of chlorination of methane
- b. What happens when:
(i) HBr is added to ethyne
(ii) Propene is subjected to ozonolysis
- c. What is antiaromaticity? Give two examples of antiaromatic compounds (4+4+2)
17. a. Explain the terms: (i) Hamiltonian operator (ii) Laplacian operator
- b. Define atomic radius. How does it vary along a period and down a group of a periodic table?
- c. Explain Diel's Alder reaction with an example (4+3+3)
