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B.M.S COLLEGE FOR WOMEN, AUTONOMOUS
BENGALURU – 560004
SEMESTER END EXAMINATION – JANUARY/FEBRUARY 2023

B.Sc. Chemistry – I Semester

ANALYTICAL, INORGANIC, PHYSICAL AND ORGANIC CHEMISTRY
(NEP Scheme 2021-22 onwards F+R)

Course Code: CHE1DSC01

Duration: 2½ Hours

QP Code:1014

Max. Marks: 60

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

PART– A

Answer any five of the following questions. Each question carries TWO marks. (5x2=10)

1. Define Accuracy.
2. Draw the radial probability distribution curve for 2p orbital.
3. Size of Na⁺ ion is smaller than Na atom. Give reasons.
4. What happens when HBr is added to ethyne.
5. Write the electronic configuration of elements with atomic number 19 & 24.
6. Chloroacetic acid is stronger than acetic acid. Give reasons.
7. Draw the conductometric titration curve for titration of strong acid VS weak base.

PART– B

Answer any four of the following questions. Each question carries FIVE marks. (4x5=20)

8. Define sampling. Discuss sampling method of solids. (5)
9. a) State and explain Hund's rule of maximum multiplicity.
b) Explain effective nuclear charge. (3+2)
10. a) Write the characteristics of s-block elements.
b) How electronegativity is determined by Mulliken's method. (3+2)
11. a) State and explain Saytzeff rule.
b) What is antiaromaticity? Give an example. (3+2)
12. a) Define potentiometry and mention any two advantages.
b) Give any two applications of Diborane (3+2)
13. a) Explain electromeric effect with an example.
b) Write a note on Laplacian operator. (3+2)

PART- C

Answer any three of the following questions. Each question carries TEN marks. (3x10=30)

- 14.a) What is titration? Discuss the general principles of volumetric analysis.
b) Explain conjugate acid base pair with an example.
c) How a volumetric flask is calibrated? (5+3+2)
- 15.a) Derive Schrodinger's time independent wave equation.
b) Write the values of l & m when n=4. (6+4)
- 16.a) Discuss the following with respect to hydrides of group -16 elements.
(i) Acidic character (ii) thermal stability of hydrides.
b) Calculate the electronegativity of Carbon from the following data:
 $E_{H-H} = 104.3 \text{ k.cal/mol}$, $E_{C-C} = 83.1 \text{ k.cal/mol}$ and $E_{C-H} = 98.8 \text{ k.cal/mol}$.
c) What are isoelectronic ions? Give an example. (4+4+2)
- 17.a) Discuss Molecular orbital theory for Covalent bonding.
b) Explain E_1 mechanism with a suitable example.
c) Among cis and trans butene which is more stable and why? (5+3+2)
- 18.a) Describe the classification of analytical techniques.
b) Give the significance of (i) principal quantum number.
(ii) azimuthal quantum number.
c) Mention any two uses of hydrogen peroxide.
d) Mention any two differences between Inductive effect and Resonance effect. (4+2+2+2)
