Second Semester B.Sc., Degree Examinations

MAY/JUNE 2026

(CBCS – SEP Scheme)

CHEMISTRY

PAPER SSB – 0230: CHEMISTRY – II

Time: 3 hrs] *[Max. Marks: 80*

Instructions to Students:

1. ***The Students should legibly write Section number along with question numbers within the margin ONLY.***
2. ***The answer without Section number and question numbers will not be valued.***
3. ***Do not write anything (except register number) on the question paper.***
4. ***The question paper consists of THREE sections A, B & C. All section are compulsory.***
5. ***Answer ALL the questions in SECTION – A, any SIX questions in SECTION – B, any THREE questions in SECTION – C.***
6. ***Draw neat and labeled diagrams wherever necessary.***
7. ***Take necessary data from tables.***
8. ***Symbols used have their usual meaning.***
9. ***Use of scientific calculator is allowed.***

SECTION – A

I. Answer all the following questions: 10 × 2 = 20

1. a) Define retention time and retention factor.
   b) What are the superiorities of TLC?
   c) Write Born - Lande equation and explain the terms.
   d) Give any two general characteristics of covalent compounds.
   e) What is Baeyer's reagent? What does it test for?
   f) Write the classification of monohydric alcohols with suitable example.
   g) Write the reactions of glycerol with oxalic acid at different temperatures.
   h) Define surface tension and viscosity.
   i) Calculate the parachor fo benzene. Given parachor value of C = 4.8, H = 17.1 double bond =23.2 and 6 membered ring = 6.1.
   j) Give the applications of liquid crystals.

Contd.....2

SECTION – B

II. Answer any SIX of the following questions: 6 × 5 = 30

2. a) Explain determinate and indeterminate errors.
   b) Write a note on Q test. (3 + 2)

3. a) Describe plate theory.
   b) Write the applications of paper chromatography. (3 + 2)

4. a) Write a note on Fajan's rules for Polarisability.
   b) Mention the importance of Latice energy and solvation energy in the context of solubility of ionic compounds. (3 + 2)

5. a) Explain hybridization and shape of BF_3 molecule based on VSEPR theory.
   b) What are bonding and antibonding molecular orbitals? (3 + 2)

6. a) Write the classification of dienes with suitable examples.
   b) Explain the mechanism of Diels - Alder reaction. (3 + 2)

7. a) Describe Lucas test for distinguishing alcohols.
   b) When 1 – butane reacts with HBr, the major product is 2 – bromobutane rather than 1 –bromobutane. Explain this outcome based on the mechanism. (3 + 2)

8. a) Derive Bragg's Equation.
   b) Define unit cell. (4 + 1)

9. a) Calculate Miller indices for a crystal plane having intercepts on three axis of crystal in the ratio (3/2 : 2 : 1).
   b) Give the classification of liquid crystals with suitable examples. (2 + 3)

SECTION – C

III. Answer any THREE of the following questions: 3 × 10 = 30

10. a) Write the expressions for mean, median, range, standard deviation and variance.
    b) i) Write the variables affecting column resolution.
       ii) Write a note on techniques of paper chromatography. (5 + 5)

11. a) Explain the Molecular orbital energy level diagram of N_2 molecule.
    b) Write the molecular orbital energy level diagram, bond order, magnetic property and electronic configuration of O_2^+. (5 + 5)

Contd.....3

12. a) Explain the manufacture of glycerol from spent lye.

    b) i) Give the mechanism of addition of HCI to ethyne.

    ii) How does ethyne react with ammoniacal silver nitrate? (5 + 5)

13. a) Describe Oswalds viscometer method of determining the viscosity of a given liquid.

    b) i) Explain common ion effect.

    ii) Write Henderson's equation and explain the terms involved in it. (5 + 5)

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