Fourth Semester B.Sc., Degree Examinations

MAY/JUNE 2026

(CBCS – SEP Scheme)

CHEMISTRY

PAPER CHET 4, SSD – 0230: CHEMISTRY – IV

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: $10 \times 2 = 20$

1. a) Write any four applications of Ultrafiltration.
   b) What are the raw materials used for the manufacture of cement?
   c) How chloral is prepared?
   d) Define (i) Degree of dissociation and (ii) Specific conductance.
   e) Define (i) Centrifugal force and (ii) Sedimentation.
   f) What are the constituents of paints?
   g) How acid chlorides are prepared from carboxylic acids?
   h) Write any four applications of Kohlausch's law.
   i) Write any two types of glasses and their compositions.
   j) Compare the basicity of Aniline, N-Methyl aniline and N,N-Dimethyl aniline.

Contd.....2

SECTION – B

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

2. Explain how precipitation titration is used for the determination of chloride by Mohr's method?
3. Describe the manufacture of glass by tank furnace process.
4. Discuss Benzoin condensation reaction with mechanism.
5. Explain the Debye-Huckel theory of strong electrolyte.
6. Write the applications of ultracentrifugation in biological separation.
7. Explain the extraction of Uranium from Pitchblende.
8. What is the action of heat on $\alpha, \beta, \gamma-$ hydroxyl acids? And discuss effect of electron donating and withdrawing groups on acidity of carboxylic acids.
9. How quantum yield is obtained for the photochemical reaction of hydrogen iodine?

SECTION – C

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

10. a) Explain the density gradient and isopycinic centrifugation.
    b) Define Viscocity. How is the coefficient of Viscocity determined using Ostwald's viscometer? (5 + 5)
11. a) Discuss the features of Elligham's diagram.
    b) How Manganese is extracted from pyrolusite using alumino thermite process? (5 + 5)
12. a) Describe the preparation of amines by Hoffmann's degradation method with mechanism.
    b) Explain the Perkin's reaction with mechanism. (5 + 5)
13. a) How transport number is determined by Hittroff method?
    b) Explain Jablonskii diagram. (5 + 5)

* * * * * *