

19 DEC. 2025 SE CHEMICAL (SEM-IV) C SCHEME IEC-II QP CODE: 10095269

Time: 3 hours

Max. Marks: 80

N.B.:

- (i) Question No.1. Is compulsory.
- (ii) Attempt any three questions out of remaining five questions.
- (iii) Assume suitable data and justify the same.
- (iv) Figures to the right indicate full marks

Q1 Solve any Four out of Six (20 Marks)

- A Write the comparison between Liq. Ammonia and Liq. SO₂
- B What is DTA? Explain in detail with example.
- C Write in detail working of Column Chromatography.
- D Explain Electrosmosis in detail.
- E Give two chemical properties of Malonic Ester.
- F Write in detail about heterogeneous catalysis.

Q2 (20 Marks)

- A Write a short note on Helmholtz Electrical double layer and Zeta potential.
- B Define in detail aromaticity of Furan and Naphthalene.
- C Define activation energy and write in detail about adsorption theory of catalysis.
- D Explain in detail shielding and De-shielding Effect in NMR spectroscopy.

Q3 (20 Marks)

- A Describe the technique of Gas Chromatography
- B Define following reaction with respect to liquid SO₂ : Solvolytic reactions
- C Describe the Autocatalysis & Catalyst poisons.
- D Explain in detail mechanism of conversion of carbonyl compound to β- Hydroxy Ester.

Q4 (20 Marks)

- A Write in detail concept of colloidal Electrolytes and micelle formation.
- B Define and explain mechanism of Benzyl –Benzilic acid rearrangement reaction.
- C Write Principle and two applications of HPLC.
- D How many no. of H1NMR signals will be in CH₃-CHCl-CH₃ & CH₃CH₂OH?

Q5 (20 Marks)

- A Explain in detail Donnan Membrane Equilibrium.
- B Define and explain mechanism of Favorskii rearrangement reaction
- C Write in detail about various types of classification of solvents.
- D What are the basic requirements for IR radiation absorption? Write any two Applications of IR spectroscopy?

Q6 (20 Marks)

- A Explain in detail Ammonolysis
- B Explain in detail the principle and working of Gas –Liquid Chromatography.
- C Write short notes on Thermo Gravimetric Analysis (TGA). Give example of it.
- D Write in detail various applications of surfactants in Detergents and Food Industry.
