

**RAN-2003080204020003****M. Sc. (Sem. - IV) Examination September - 2025****Organic Chemistry (Paper - II) Selected Topics in Organic Chemistry - II****Time: 3 Hours]****[Total Marks: 70****સૂચના : / Instructions**

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the above details on your answer book
- (2) All questions are compulsory.
- (3) Figures to the right indicate full marks of the question.

Seat No.:

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Student's Signature

Q. 1. Answer any three of the following. (18)

- Name different methods of ion sources. Explain chemical ionization method.
- Explain the formation peaks at m/e 88, 72, 58 and 30 in the mass spectrum of N- ethyl propyl amine. Indicate the ion responsible for the base peak.
- Give the fragmentations of Hexane, ethyl benzene and toluene with their base peak. Discuss Mc Lafferty rearrangement.
- Explain the ring rule and nitrogen rule. Explain how isotopic clusters of chloro and bromo compounds can be distinguished by mass spectra.

Q. 2. Answer the three of the following Question. (18)

- Discuss the importance of Hammett equation in the study of reaction mechanism.
- State Hammond's postulate. Explain with suitable examples the application of Hammond's postulate, in determining the shape and geometry of transition state.
- Explain thermodynamic and kinetic control giving illustration of 3-methyl 2-butanone.
- Write a note on : Taft equation

Q. 3. Answer the three of the following Question. (18)

- Discuss the alkylation and ring cleavage reactions of 1, 2, 3 - triazole. Explain the Dimerorth rearrangement giving appropriate mechanism.
- Give important methods of preparation and reactions of Isoquinoline.
- Give synthesis of 1, 3, 4 - Oxadiazole and explain electrophilic attack at nitrogen atom and photochemical reaction of 1, 3, 4 - Oxadiazole.
- Give important methods of preparation and reactions of Quinoxaline.

Q. 4. Answer the three of the following question. (16)

- Write properties and uses of Starch.
- Write on polyurethanes and also explain properties and uses of polyurethanes.
- "All polymers are macromolecules but all macromolecules are not polymers", justify the statement. Discuss the method of preparation, general properties and uses of silicone rubbers.
- Discuss the methods of preparation and properties of poly amino acids. Enlist the medical and biological applications of poly amino acids.