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RE-3334

M. Sc. (Part - I) (SF) (IC / PC / EC) Examination

April / May – 2010

Organic Chemistry : Paper - II

Time : **3** Hours] [Total Marks : **52**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **M. SC. - 1 (SF) (IC / PC / EC)**

Name of the Subject :

☛ **ORGANIC CHEMISTRY - 2**

☛ Subject Code No. : **3 3 3 4** ☛ Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Answer to the two sections should be written in separate answer books.

(3) Figures to the right indicate full marks of the questions.

SECTION – I

1 (a) What is resolution? Give two methods of resolution of a racemates. **9**

(b) Draw the different conformations of the following and discuss their stability :

(i) 1,3-ditertiary butyl cyclohexane

(ii) 1,4-dihydroxy cyclohexane

(iii) 1,3-dimethyl cyclohexane

(iv) 1,2-dichlorocyclohexane.

(c) Give the different interconversion of Fischer, Newman and Sawhorse projections with examples. Give any one newer method of asymmetric synthesis.

OR

1 (a) What is conformation? Give the different conformations of cyclohexane and discuss its stability. **9**

(b) What is prochirality? Explain the prochirality in 1,3-propane diol.

(c) Define term chirality with examples. Discuss R-S nomenclature by using CIP rule.

2 (a) What are carbanions? Give two methods of formation of carbanions. Discuss the important factors that stabilize carbanion. **9**

(b) What are free radicals? Discuss the stability of triarylmethyl radical.

(c) Give mechanism of the following :

(i) Dienone-Phenol rearrangement

(ii) Curtius rearrangement.

OR

2 (a) What are carbocations? Give two methods of formation of carbocations. Discuss the stability of carbocations based on hyper conjugation and resonance. **9**

(b) What are carbenes? Give two methods for generation of carbenes. Discuss the role of carbene in Hofmann's reaction.

(c) Give mechanism and two synthetic applications of Favorskii rearrangement.

3 (a) What is Friedal Craft reaction? Explain the conversion of benzene to cumene using FC reaction. **8**

(b) Explain the dehalogenation of vicinal halides.

(c) Give mechanism of the following :

(i) Aldol condensation

(ii) Claisen reaction.

OR

3 (a) What is aromatic electrophilic substitution reaction? Discuss the nitration process with mechanism. **8**

(b) What are elimination reactions? Explain the mechanism of Shapiro reaction.

(c) Give mechanism of the following :

(i) Knoevenagel condensation

(ii) Stobbe condensation

SECTION – II

4 (a) Discuss the photo isomerization of stillbene in presence of absence of sensitizer. **9**

(b) Write a note on Claisen rearrangement.

(c) Prove that "In Electrocyclic reaction the ring opening of Cyclobutene Butadiene system, photochemical reaction follows disrotatory path and thermal reaction follows conrotatory path."

OR

4 (a) Discuss Norrish type-I and Norrish type-II reactions. **9**

(b) Discuss Paterno-Buchi reaction.

(c) Write a note on Sigmatropic rearrangement.

5 (a) What are amylose and amylopectin? Prove that amylopectin is a non-linear molecule and branch point involves C_1-C_6 linkage. **9**

(b) Explain Merrifield polypeptide synthesis.

(c) Prove the structure of pyrimidine nucleosides.

OR

5 (a) Discuss the important of methylation, acetolysis and hydrolysis in the structure determination of cellulose. **9**

(b) Give any two methods for the determination of the C-terminal amino acid.

(c) Give the name and structure formula of sugars and bases present in nucleic acids. Give the synthesis of adenosine.

6 (a) Give evidences for the structure of farnesol. **8**

(b) What are sterols? How are they classified? Give the synthesis of Diel's Hydrocarbon.

(c) Explain the Blanc's rule. How is it useful to establish the ring system in cholesterol?

OR

6 (a) Prove the structure of zingiberene analytically. **8**

(b) What are terpenoids? How are they classified? Give the synthesis of eudalene.

(c) Justify the position of hydroxyl group in cholesterol.
