* S B - 3 4 2 7 / 1 0 0 *

SB-3427

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

March / April – 2011

Organic Chemistry : Paper - II

(Old Course)

Time : Hours] [Total Marks :**70**

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. (PART - I) (SF)

Name of the Subject :

☛ ORGANIC CHEMISTRY : PAPER - 2 (OLD COURSE)

☛ Subject Code No. : 3 4 2 7 ☛ Section No. (1, 2,.....) : 1&2

Seat No. :

Student's Signature

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

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

SECTION - I

1 Answer any **three** of the following : **9**

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

(b) Define prochirality. Explain the prochirality in 1,3-propane diol.

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

(d) What is resolution ? Give two methods of resolution of a racemates.

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

2 Answer any **three** of the following : **9**

(a) What are carbocations ? Give two methods of formation of carbocations. Discuss the stability of carbocations based on hyperconjugation and resonance.

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

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

(d) What are carbanions ? Give two methods of formation of carbanions. Discuss the important factors that stabilize carbanion.

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

3 Answer any **three** of the following : **8**

(a) What is aromatic electrophilic substitution ?

reaction ? Discuss the nitration process with mechanism.

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

(c) Give mechanism of the following :

(i) Knoevenagel condensation

(ii) Stobbe condensation

(d) What is Friedal Craft reaction ? Explain the conversion of benzene to cumene using FC reaction.

(e) Give mechanism of the following :

(i) Aldol condensation

(ii) Claisen reaction.

SECTION - II

4 Answer any **three** of the following : **9**

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

(b) Discuss Paterno-Buchi reaction.

(c) Write a note on Sigmatropic rearrangement.

(d) Discuss the photoisomerization of stillbene in presence and absence of sensitizer.

(e) Write a note on Claisen rearrangement.

5 Answer any **three** of the following : **9**

(a) Discuss the importance of methylation, acetolysis and hydrolysis in the structure determination of cellulose.

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

(c) Give the names and structural formulas of sugars and bases present in nucleic acids. Give the synthesis of adenosine.

(d) What are amylose and amylopectin ? Prove that amylopectin is a nonlinear molecule and branch point involves C_1-C_6 linkage.

(e) Explain Merrifield polypeptide synthesis.

6 Answer any **three** of the following : **8**

(a) Prove the structure of zingiberene analytically.

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

(c) Give evidences for the structure of farnesol.

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

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