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SB-3432

M. Sc. (Part - I) Examination

March / April – 2011

Organic Chemistry : Paper - II

(Old Course)

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. (PART - I)**

Name of the Subject :

☛ **ORGANIC CHEMISTRY : PAPER - II (OLD COURSE)**

☛ Subject Code No. : **3 4 3 2** ☛ 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 are nitrenes ? Explain Hofmann reaction.

(b) What are carbanions ? Give the methods of formation of carbonions. Compare Claisen condensation with aldol condensation.

(c) Give any two methods of formulation of carbenes. Explain Wolf rearrangement.

(d) What are arynes ? Describe electrophilic addition and cyclo-addition reaction of arynes.

(e) Discuss important methods of preparation of long-lived free radical.

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

(a) Explain principle of photochemistry. Give orbital view of excitation.

(b) Explain photodimerization of norbornene with acetone as photosensitizer.

(c) Explain the photochemical reaction of saturated cyclic ketone.

(d) Explain photochemistry of conjugated olefins with illustrations.

(e) Discuss fluorescence and phosphorescence.

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

(a) Explain the terms : DNA, RNA, ADP and ATP. Give the synthesis of ATP.

(b) What are amylose and amylopectin ? Prove that amylopectin is not a linear molecule and branch point involves C_1-C_6 linkage.

(c) What is acetolysis ? Discuss its importance in determining the structure of cellulose.

(d) Give the synthesis of adenosine or guanosine.

SECTION – II

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

(a) Describe the preparation of the following giving reaction conditions and reagents :

(i) Dissiamyl borane

(ii) Thexyl borane

(iii) 9. BBN.

(b) Discuss the synthetic applications of organocopper compounds.

(c) Give the applications of organozinc compounds in organic synthesis.

(d) Explain stereochemistry of hydroboration of alkanes with suitable examples.

(e) Discuss the mechanism of metal hydride reduction of saturated and unsaturated carbonyl compounds.

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

(a) Give any two synthesis for benzothiazole. Discuss its reactions.

(b) Give the synthetic methods for imidazole and its reactions.

(c) Give the synthesis for quinazoline. Discuss its reactions.

(d) Discuss the preparation and reactions of pyrazine.

(e) Give the structure of the following :

(i) Thiazole [4,5 -b] pyrazine

(ii) **5**H - Pyrido [2,3 - d] - o - oxazine

(iii) Furo [3, 2 - b] furan

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

(a) What is resolution ? Give any three methods of resolution of racemates.

(b) What are stereospecific reaction and stereo selective reaction ? Explain stereospecific addition to alkenes.

(c) Define prochirality. Explain the prochirality in 1,3-propanediol.

(d) Define isomerism. Explain dynamic stereochemistry.

(e) What is conformation ? Discuss conformation of decalin.
