



AAH-7313

Seat No. _____

M. Sc. (Sem. II) Examination

April / May - 2018

Chemistry : Paper - 502

(Organic Chemistry)

Time : 3 Hours]

[Total Marks : 70

Instructions : (1) All questions are compulsory and carry equal marks.

(2) Reply only in English.

1 Answer any **three** :

- (1) Discuss the free radical mechanism at an aromatic substrate.
- (2) Discuss the Sandmeyer & Hunsdiecker reactions with mechanism.
- (3) Discuss the mechanism of allylic halogenations with NBS.
- (4) What is autooxidation? Discuss in detail.
- (5) Discuss the arylation of aromatic compounds by diazonium salt.

2 Reply any **three** :

- (1) Discuss the mechanism of metal hydride reduction of saturated and unsaturated carbonyl compounds.
- (2) Discuss the hydrolysis of ester and amide.
- (3) Discuss the mechanism & stereochemical aspects of Wittig reaction.
- (4) Discuss the mechanism of Stobbe and Mannich reactions.
- (5) Discuss the mechanism and stereochemical aspects of reduction by LiAlH_4 .

3 Reply any **two** :

- (1) What are electrocyclic reactions? Discuss the thermal and photochemical conversion of 1, 4-hexadiene into dimethylcyclobutene and of 2, 4, 6-octatriene into dimethylcyclohexadiene through FMO approach.
- (2) Discuss the correlation diagram of the conversion of Cyclohexadiene into 1, 3, 5-hexatriene through Conrotatory and Disrotatory motion.
- (3) Discuss the electrocyclic and cycloaddition reactions using PMO approach.

4 Reply any **three** :

- (1) Give a comparative account of E_1 , E_2 and E_{1CB} mechanism.
- (2) What is Sigmatropic rearrangement? Discuss [1, 3] suprafacial and antarafacial shift of H.
- (3) Discuss the stereoselectivity, stereospecificity and regioselectivity of E_2 reaction.
- (4) Discuss the Cope and Claisen rearrangements.
- (5) Discuss the mechanism and orientation of Pyrolytic elimination.

5 Answer any seven :

- (i) What are pericyclic reactions?
 - (ii) Draw the M.O. of allylic system. Write the electronic configuration of allylic carbocation, anion and free radical.
 - (iii) What is Mannich reaction?
 - (iv) Discuss Woodward Hoffmann rule for electrocyclic reactions.
 - (v) What do you mean by fluxional tautomerism ?
 - (vi) Treatment of iso-propyl chloride with aqueous KOH gives iso-propyl alcohol but with alcoholic KOH the product is propene, Why ?
 - (vii) Define electrocyclic reactions.
 - (viii) What do you mean by autooxidation?
 - (ix) Write the formula of NBS.
 - (x) What will be the product of elimination reaction of sec. butyl chloride ?
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