

Seat No. : _____

MB-143

March-2019

M.Sc., Sem.-I

402 : Chemistry (Organic Chemistry)

Time : 2:30 Hours]

[Max. Marks : 70

- Instructions :** (1) All questions are *compulsory*.
(2) Figures to right indicate full marks.

1. (A) Answer the following : 14

- (i) Explain Orientation in the reaction of “ $\text{Me}_2\text{CH}\cdot\text{CHMeS}^+\text{Me}_2$ ” under E1 and E2 mechanism.
- (ii) What is allylic rearrangement ? Explain allylic rearrangement giving suitable example.

OR

- (A) Discuss Chugaev and Cope reactions with mechanism. 7
- (B) 2-chloropropyl ethyl sulphide on hydrolysis gives 2-hydroxy propyl ethyl sulphide as a normal product and 1-hydroxy isopropyl ethyl sulphide as a rearranged product. Explain giving mechanism. 7

(B) Answer the following questions in short : (any **four**) 4

- (1) Define Eclipsing effect in E2.
- (2) Define Zaitsev's rule of elimination.
- (3) Give one example of E1CB mechanism.
- (4) Define the effect of temperature in elimination and substitution reaction.
- (5) What is mixed $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reaction ?
- (6) What will be the major product when 2-methyl cyclohexanone undergoes dehydration by elimination reaction ?

2. (A) Answer the following : 14

- (i) Prepare HMO diagram for cyclobutadiene and cyclopropenyl cation using Frost circle diagram. Discuss their aromatic character.
- (ii) Describe various factors that affects the strength of acids.

OR

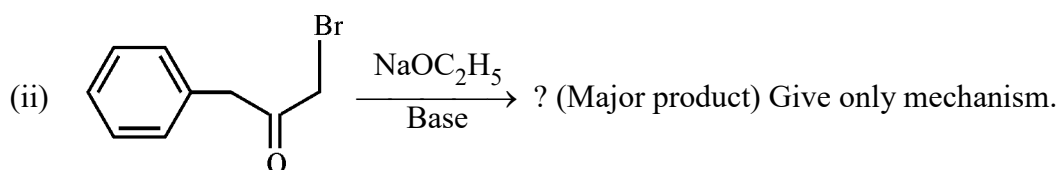
- (a) Discuss aromatic character of azulenes. 7
- (b) Give Hammett equation and explain all the terms of the equation. Discuss its limitations. 7

(B) Answer the following questions in short : (any **four**) 4

- (1) Define Antiaromaticity.
- (2) How many shielded and deshielded protons in 18-(Annulene) ?
- (3) Define Huckel's Rule.
- (4) What is diatropic current ?
- (5) Which structural effect does make salicylic acid more acidic than p-hydroxybenzoic acid ?
- (6) Compare the basicity of amines and amidines.

3. (A) Answer the following : 14

- (i) Write a note on non-classical carbocation and discuss the stability of free radicals.

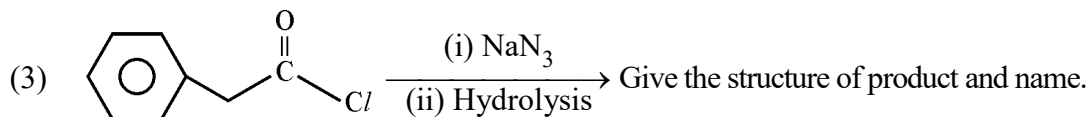


OR

- (a) Discuss the structure and stability of carbanions. 7
- (b) Discuss the principle, mechanism and applications of Schmidt rearrangement. 7

(B) Answer the following questions in short : (any **three**) 3

- (1) Give the example of rearrangement involving C to O migration.
- (2) Give the principle of Pinacol-Pinacolone rearrangement.



- (4) Arrange the following carbocations in decreasing order of their stability.
Benzyl, Triphenyl methyl and Tropylium cation.
- (5) Give one method to prepare free radicals.

4. (A) Answer the following : 14
- (i) Discuss the stereochemistry of biphenyl and nitrogen compounds.
 - (ii) Write a note on prochirality.
- OR**
- (a) Discuss the stereochemistry of allenes and Oxyphosphines. 7
 - (b) Define stereo selectivity and stereo specificity. Discuss the addition of Br₂ to Trans-3-Hexene. 7
- (B) Answer the following questions in short : (any **three**) 3
- (1) What is Helicity ?
 - (2) How will you carry out resolution of racemic-acid by chemical method ?
 - (3) Define :Distereotopic atoms.
 - (4) Give the structure of spiro (3, 4)-octane.
 - (5) What are nitrenes ?
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