



K23P 3262

Reg. No. :

Name :



First Semester M.Sc. Degree (CBSS – Supple. (One Time Mercy Chance)/Imp.)
Examination, October 2023
(2014 to 2022 Admissions)
CHEMISTRY
CHE1C.03 : Organic Chemistry – I

Time : 3 Hours

Max. Marks : 60

SECTION – A

Answer **all** questions in **one** word or **one** sentence. **Each** question carries **1** mark.

- What are ambident substrates ?
- Among 2-butene and 1-butene which is more stable ? Justify your answer.
- What is meant by enantiomeric excess ?
- Which resonance form is more reasonable and why ?
- a)  b) 
- Why *trans*-decalin is conformationally locked ?
- What is the effect of solvent polarity on the rate of S_N1 reactions ?
- What is Paterno-Buchi reaction ?
- What is a photosensitizer ?

(8×1=8)

SECTION – B

Answer **any eight** questions. Answer may be in **two** or **three** sentences. **Each** question carries **2** marks.

- Explain the term stereotopicity.
- Explain the structure carbanions.
- Explain inductive effect.

P.T.O.

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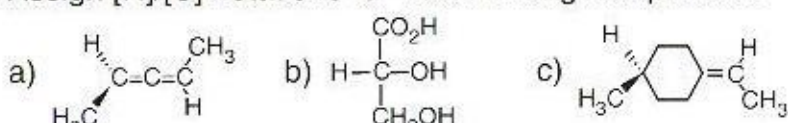
- Distinguish between aromatic, anti-aromatic and non-aromatic systems using Huckel's theory of aromaticity.
- What is Wittig reaction ?
- Explain Photo-Fries reaction.
- What is atropisomerism ? Explain.
- Explain Bredt's rule with suitable examples.
- What is Chugaev reaction ? Explain.
- Explain benzyne mechanism.
- Explain di- π methane rearrangement.
- What is Barton reaction ?

(8×2=16)

SECTION – C

Short paragraph questions. Answer **any four** questions. **Each** question carries **3** marks.

- Explain $E1cB$ mechanism with a suitable example.
- Explain the structure and formation of carbocations.
- Explain Huckel's theory of aromaticity.
- Discuss about the formation and reactivity of singlet oxygen.
- Assign [R]/[S] notations for the following compounds.



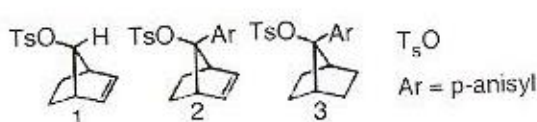
- Discuss about octant rule.
- Explain any two photochemical reactions of conjugated dienes.



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- The solvolysis of the compound 1 in acetone-water mixture at 85°C gave stereoselective products while the solvolysis of 2 and its stereo isomer was not stereoselective. The rate of solvolysis of 2 and 3 is nearly equal. Give reason.



(4×3=12)

SECTION – D

Essay type questions. Answer **four** questions. **Each** question carries **6** marks.

- Explain the mechanism of the following reactions i) Pinacol rearrangement, ii) Lossen rearrangement, iii) Favorski rearrangement.

OR

- Explain the mechanism of the following reactions i) Beckmann rearrangement, ii) Wolff rearrangement, iii) Wagner-Meerwein rearrangement.

- Discuss about the aromaticity of annulenes.

OR

- Explain the structure, formation and properties of carbenes and nitrenes.

- Discuss about the fate of photochemically excited molecules.

OR

- Discuss about the photochemistry of aromatic compounds.

- What are the factors that determine the competition between substitution versus elimination reactions ? Explain.

OR

- Explain the mechanistic aspects of aliphatic S_N1 , S_N2 and S_Ni reactions.

(4×6=24)