

2023
M.Sc.
First Semester
 CORE – 02
CHEMISTRY
Course Code: MCHC 1.21
 (Organic Chemistry - I)

Total Mark: 70
 Time: 3 hours

Pass Mark: 28

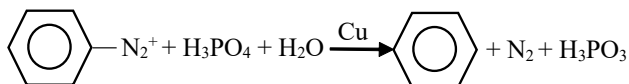
Answer five questions, taking one from each unit.

UNIT-I

1. (a) Discuss CIP-rule to assign R- and -S configuration with suitable examples. 8
- (b) What do you mean by the term helicity? Discuss with one example. 4
- (c) Draw the conformers of tetra hydroxy pyran. 2
2. (a) Discuss the stereo chemical aspect of addition of Br₂ to cis and trans 2-butene. 8
- (b) What is the effect of conformers on reactivity on SN² and E₂ reactions? 6

UNIT-II

3. (a) Discuss Taft equation in details. 5
- (b) What is anchimeric assistance? Discuss with an example. 6
- (c) Give the mechanism of the following reaction: 3



4. (a) How does a sigma bond acts as neighbouring group to participate in accelerating rate of nucleophilic substitution reactions? 5
- (b) Give the synthetic application of nucleophilic substitution reactions of
 - (i) Alcohol
 - (ii) Thiols
 - (iii) Amines3×3=9

UNIT-III

5. (a) Discuss the stereochemical aspect of E_2 -elimination of conformers of 2-bromo butane. 8
(b) What are elimination reactions? Discuss its types with mechanism. 6
6. (a) Discuss the stereo chemistry of E_2 reactions of erythro isomers of 1-chloro-1,2-diphenyl propane. 8
(b) Discuss the formation of $>C=N-$, $>C=O$ and $-C\equiv C-$ bonds by elimination reactions. 6

UNIT-IV

7. (a) Explain Norrish type-I and Norrish type-II reaction with suitable example. 3+4=7
(b) Explain photochemical isomerisation of stilbene compound. 3
(c) Explain Hoffmann-Loffler-Freytag reaction with suitable example. 4
8. (a) Explain the following reactions with suitable example
(i) Photoreduction of benzophenone 3
(ii) Barton reaction 4
(b) Explain the term photosensitization and quenching. 4
(c) Write the conditions for donor-acceptor relationship to function in photochemical reactions. 3

UNIT-V

9. (a) Explain electrocyclic reaction of 1,6-disubstituted-1,3,5-hexatriene by FMO. approach. 6
(b) Explain Sommelet-Hauser rearrangement reaction with suitable example. 4
(c) Write cyclo addition reaction of 1,3-butadiene with ethene and indicate the mode of reaction. 4
10. (a) Explain Claisen and thio-Claisen reaction with mechanism. 6
(b) Explain the chelotropic reaction of SO_2 with 1,3-butadiene. 4
(c) Explain 1,5-sigmatropic methyl shift by FMO approach taking a suitable example. 4