



K24P 3881

Reg. No. :

Name :

I Semester M.Sc. Degree (C.B.C.S.S. – O.B.E. – Reg./Supple./Imp.)
Examination, October 2024
(2023 Admission Onwards)

CHEMISTRY/CHEMISTRY WITH DRUG CHEMISTRY SPECIALIZATION
MSCHD01C03/MSCHE01C03 : Organic Chemistry – 1

Time : 3 Hours

Max. Marks : 60

SECTION – A

Answer **any five** questions. Short answer questions. **Each** carries **three** marks.

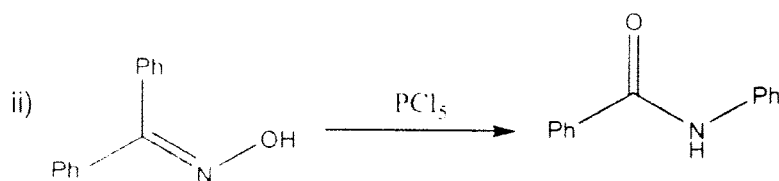
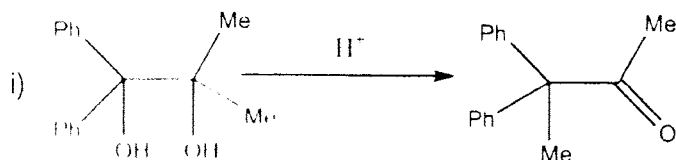
1. Differentiate singlet and triplet carbenes.
2. Explain Sommelet-Hauser rearrangement.
3. What are non-classical carbocations ?
4. State and explain Hofmann elimination.
5. Discuss *cine* substitution.
6. What is photo Fries rearrangement ?

(5×3=15)

SECTION – B

Answer **any three** questions. Short answer questions. **Each** question carries **six** marks.

7. Propose the mechanisms of the following transformations :



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8. Discuss the aromaticity of annulenes. Why cyclooctatetraene (C_8H_8) prefers a tub-shaped conformation other than planar conformation ?
9. Illustrate the arenium ion mechanism of aromatic electrophilic substitution.
10. Explain Norrish type-I and Norrish type-II cleavages with appropriate examples.
11. Create the Jablonski diagram to explain radiative and non-radiative processes undergone by excited molecules. (3×6=18)

SECTION – C

Answer **any three** questions. Essay type questions. **Each** question carries **nine** marks.

12. Briefly explain the mechanistic steps involved in the following :
 - i) Demjanov rearrangement.
 - ii) Favorskii rearrangement.
 - iii) Baeyer-Villiger oxidation.
13. Compare the mechanisms and stereochemical aspects of E1, E2 and E1cB eliminations.
14. Explain the mechanisms of the following reactions using appropriate examples :
 - i) S_N2 reaction
 - ii) S_Ni reaction
 - iii) $SE1$ reaction
15. Compare and contrast S_NAr mechanism and benzyne mechanism of aromatic nucleophilic substitution.
16. Illustrate the following photochemical reactions with suitable examples :
 - i) Paterno-Buchi reaction
 - ii) Hofmann-Löffler-Freytag reaction
 - iii) Barton reaction.

(3×9=27)