



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.

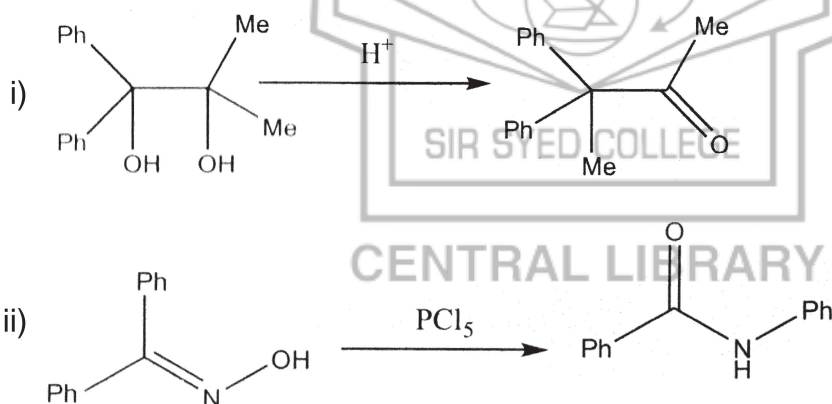
1. Differentiate singlet and triplet carbenes.
2. Explain Sommelet-Hauser rearrangement.
3. What are non-classical carbocations ?
4. State and explain Hofmann elimination.
5. Discuss *cine* substitution.
6. What is photo Fries rearrangement ?

(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  $SNAr$  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)**