

QP CODE: 26801751



Reg No :

Name :

INTEGRATED M.Sc. DEGREE EXAMINATION, APRIL 2026

Eight Semester

INTEGRATED M.Sc. BASIC SCIENCES-CHEMISTRY

CORE - ICH8CR02 - ADVANCED ORGANIC CHEMISTRY - II

2020 Admission Onwards

D30375F1

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. Explain Briefly Collin's and John's oxidation.
2. What is the mechanism of the Birch reduction, and how does it differ from other metal-based reductions?
3. What is Baylis-Hillman reaction?
4. Explain Tishchenko reaction .
5. What is Yamaguchi Esterification ?
6. What is DMP? Give one of its method of preparation .
7. How do diastereoselective reactions differ from enantioselective reactions in terms of selectivity?
8. Give a photochemical method for the synthesis of cyclobutanes.
9. Briely describe Radical olefin cyclization.
10. Briefly describe SPPS .

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. Compare Jacobsen epoxidation with Sharpless asymmetric epoxidation in terms of reaction conditions, substrate scope, and stereoselectivity.
12. Compare the use of OsO₄ with KMnO₄ in the dihydroxylation of alkenes, highlighting the differences in reaction conditions and selectivity.
13. What is Negishi reaction ? Explain the mechanism.





14. Explain the Mitsunobu reaction mechanism involving DEAD and DIAD.
15. Discuss the mechanism of Brown allylation and crotylation reactions.
16. Explain Bergman and Nazarov cyclisation.
17. Write note on the construction of macrocyclic rings.
18. Describe the role and reactivity of cyclic and acyclic protecting groups for hydroxyls, carboxyls, carbonyls, and amino groups. How do these protecting groups influence the overall synthetic strategy?

(6×2=12 weightage)

Part C (Essay Type Questions)

Answer any **two** questions.

Weight 5 each.

19. Explain the mechanism for the following reactions a) Swern oxidation b) Moffatt-Pfitzner oxidation c) Kornblum oxidation.
20. Describe the mechanism of the Nozaki-Hiyama-Kishi (NHK) reaction and Miyaura borylation.
21. Discuss the synthetic utility of Red-Al as a reducing agent compared to LiAlH_4 . Provide examples of reductions where Red-Al offers distinct advantages over other hydride transfer reagents.
22. Compare and contrast the reactivity and stability of five-membered heterocycles containing different heteroatoms (N, S, O). Discuss how the presence of nitrogen, sulfur, or oxygen in the ring influences the electronic properties, acidity/basicity, and overall chemical behavior of these heterocyclic compounds.

(2×5=10 weightage)

