

SECOND SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2025
(Regular/Improvement/Supplementary)

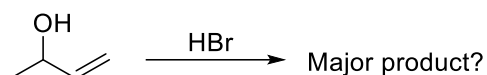
CHEMISTRY
FCHE2C07: REACTION MECHANISM IN ORGANIC CHEMISTRY

Time: 3 Hours

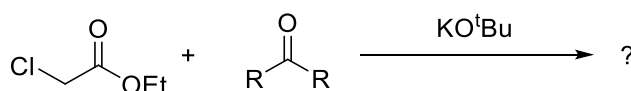
Maximum Weightage: 30

Section A: Short answer questions. Answer any *eight* questions. Each carries 1 weightage.

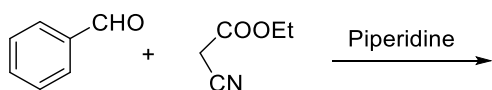
1. Discuss SET with a suitable example.
2. Give the role of neighbouring group participation in substitution reactions.
3. Predict the major product and mechanism of the following reaction.



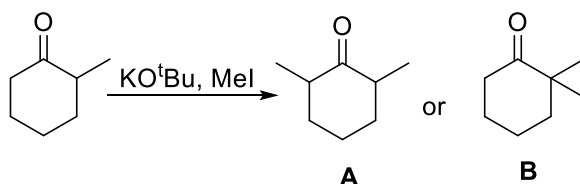
4. State Saytzeff rule and Bredt's rule.
5. Predict the product and mechanism of the following reaction.



6. Identify the reaction and predict the product.



7. What is Dieckmann condensation?
8. Predict the product of the following reaction and justify your answer.



9. Explain briefly S_Ei mechanism with an example.
10. Describe Wolf rearrangement.

11. Give any two reactions of carbenes.

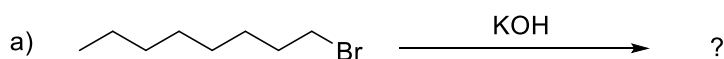
12. Explain Curtius rearrangement.

(8 × 1 = 8 weightage)

Section B: Short essay questions. Answer any *four* questions. Each carries 3 weightage.

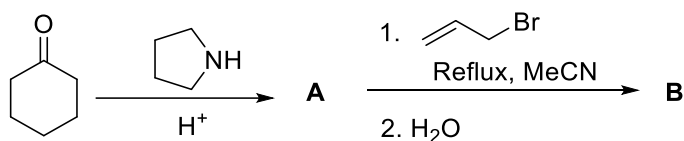
13. Write a detailed note on classical and non-classical carbocations.

14. Predict the product and identify the mechanism of the reactions.



15. Explain the structure and reactions of nitrenes.

16. Predict the products of the reaction and explain the mechanism.



17. Explain the mechanism of:

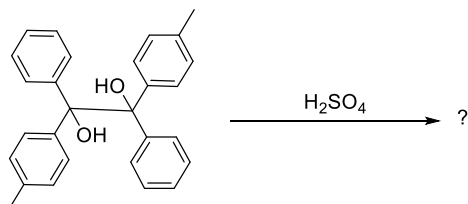
a) Reformatsky reaction.

b) Stobbe condensation.

c) Darzen condensation.

18. Explain Barton reaction and Hoffmann-Löffler-Freytag reaction.

19. Predict the major product and mechanism of the reaction:



(4 × 3 = 12 weightage)

Section C: Essay questions. Answer any two questions. Each carries 5 weightage.

20. a) Explain Markonikov's and Anti-Markonokov's addition with suitable examples.
b) Discuss Michael addition with examples.
d) Illustrate the mechanism of hydroboration.
21. a) Write a detailed note on generation, structure and stability of carbenes.
b) Discuss on *N*-Bromosuccinimide and its reaction.
22. Identify A, B, C, and D in the following reaction and explain the mechanism.



23. Discuss the mechanism of the following reactions.
- a) Benzidine rearrangement.
b) Von Richter rearrangement.
c) Beckmann rearrangement.
d) Hofmann rearrangement.

(2 × 5 = 10 weightage)