

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, DECEMBER 2015

(CUCSS)

Chemistry

CH 3E 01—SYNTHETIC ORGANIC CHEMISTRY

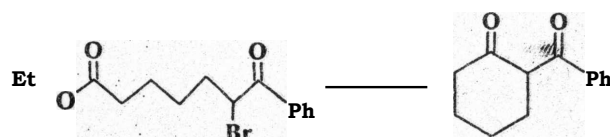
Time : Three Hours

Maximum : 36 Weightage

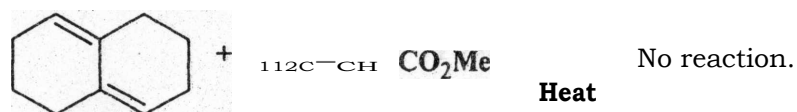
Section A

Answer **all** the questions.
Each question carries 1 weightage.

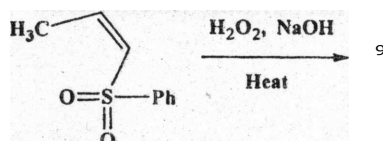
1. Mention the reagent / reaction condition for the reaction given below and propose mechanism.



2. Explain the following observation with suitable reason.



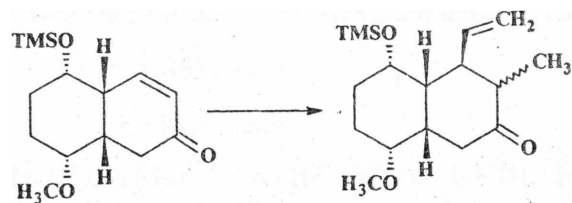
3. What are the catalysts used in Skraup reaction ? What is the role of glycerol ?
4. Give the mechanism of allytic halogenation using NBS.
5. Identify the product with proper stereochemistry and propose the mechanism.



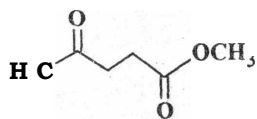
6. What is Lindlar's catalyst ? Explain its uses.

Turn over

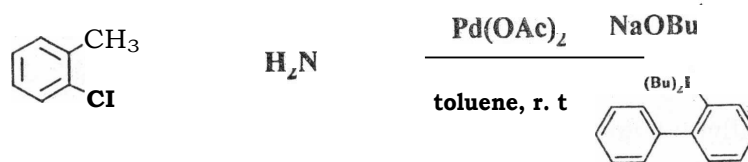
7. Suggest the suitable reagents and propose mechanism for the two step reaction shown below :



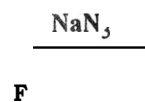
8. Write a note on preparation and applications of organocadmium reagent.
9. Illustrate one group disconnection with suitable example.
10. Draw a retrosynthetic strategy for the compound given below.



11. Explain the biological role of prostaglandins.
12. Give the evidence for the presence of β -ionone ring system in vit.A₁.
13. Name the reaction given below and predict the product.



14. Predict the product formed in the following reaction with suitable mechanism.

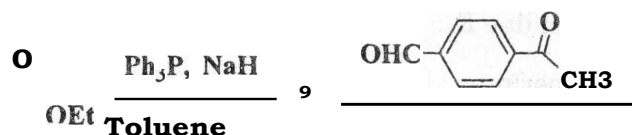


(14 x 1 = 14 weightage)

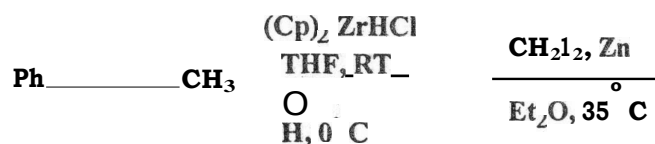
Section B

Answer any **seven** questions.
Each question carries 2 weightage.

15. Explain the formation of intermediate and product along with mechanism for the following reaction.



16. Outline the synthesis of isoquinoline by Bichler-Napieralski method.
17. What is Birch reduction? Discuss the synthetic applications.
18. Discuss with suitable mechanism the oxidation of allylic alcohols with SeO_2 .
19. With suitable mechanism, identify the intermediate and product for the following reaction. Mention the stereochemistry wherever applicable.



20. Illustrate with suitable mechanism the reactivity of Bu_3SnH in the presence and absence of radical initiator by taking suitable example.
21. Give brief account of principle of protecting hydroxyl and carbonyl groups while planning a synthesis.
22. Suggest the steps involved in the synthesis of reserpine starting from 6-methoxytryptamine.
23. Explain the mechanism of Stille carbonylative cross coupling reaction.
24. Outline the synthesis of caffeine starting from uric acid.

(7 x 2 = 14 weightage)

Turn over

Section C

*Answer any two questions.
Each question carries 4 weightage.*

25. Substantiate with suitable examples the use of lithium aluminium hydride in reducing various functional groups of organic compounds.
26. Discuss the structure of prostaglandine E₁.
27. Outline the synthesis of cephalosporin.
28. Discuss the electrophilic and nucleophilic substitution reaction in pyrazole.

(2 x 4 = 8 weightage)