



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – CHEMISTRY

SECOND SEMESTER – APRIL 2015

CH 918 – ORGANIC CHEMISTRY - III

Date : 21/04/2015

Dept. No.

Max. : 100 Marks

Time : 09:00-12:00

Part-A

Answer all questions. Each question carries two marks:

(10x2=20)

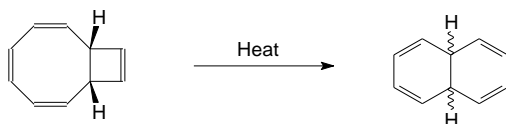
1. Write the Woodward Hoffmann rules for cycloaddition reactions.
2. What is group transfer reaction? Give an example.
3. Give the (1,5)-sigmatropic rearrangement reactions.
4. What is photoisomerisation?
5. Draw Jablonskii diagram and mention the photophysical processes.
6. Mention the importance of retrosynthetic approach.
7. Why is convergent synthesis better than linear stepwise synthesis?
8. How are protective groups important in the synthesis of an organic compound?
9. What is Birch reduction? Write the equation.
10. Write the mechanism of SeO_2 oxidation of toluene.

Part-B

Answer any eight questions. Each question carries five marks:

(8x5=40)

11. Write the correlation diagram for the cycloaddition reaction of 1,3-butadiene and ethylene. State whether the reaction is thermally or photochemically feasible.
12. Find the mechanism of the following reaction. Predict the stereochemistry of the product.



13. The following compound undergoes 5,5- and 3,3-sigmatropic rearrangement reactions. Write the mechanism of the reaction and predict the product.



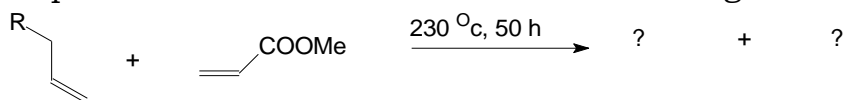
14. What is Barton reaction? Give an example from steroidal compounds.
15. Write the mechanism of photochemical rearrangement of 4,4-diphenyl-2,5-cyclohexadienone.
16. Write a short note on donor and acceptor synthons. What is Umpolung concept of Seebach?
17. How C-C disconnections are made in retrosynthesis? Write about C-C disconnections in 1,3-difunctionalised compounds.
18. How are oxidizing agents chemoselective? Explain with suitable examples.
19. Explain the mechanism of Aldol condensation and Wittig reaction.
20. Discuss the mechanism of Baeyer Villiger reaction with suitable example.
21. Discuss on the electroorganic synthesis by reduction with suitable examples.
22. Explain the synthetic applications of oxidation reactions using lead tetraacetate and mercuric acetate.

Part-C

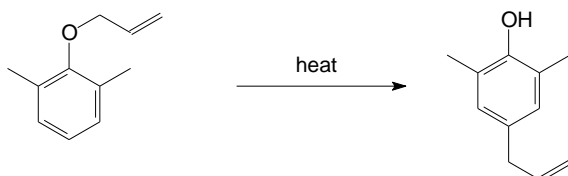
Answer any four questions. Each question carries ten marks:

(4x10=40)

23a. Predict the product and the mechanism of the following reaction.



b. There are two rearrangements involved in the following reaction. Identify them and write the mechanism.



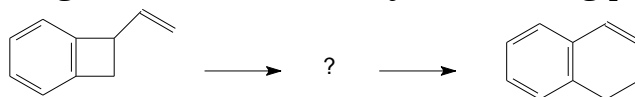
(5+5)

24a. Explain the mechanism of Darzen's reaction and Mannich reaction.

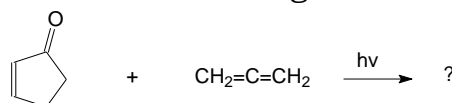
b. Bring out the differences between Clemmensen and Wolff Kishner reductions with suitable example.

(5+5)

25a. Effect the following conversions. Identify the missing product.



b. Predict the products in the following reaction.



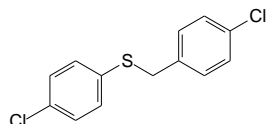
(5+5)

26a. Explain the photoreduction of benzophenone using diphenylmethanol.

b. Write a short note on the photochemistry of α,β -unsaturated ketones. Give an example.

(5+5)

27a. Explain the retrosynthesis of the following compound.



b. Give a detailed scheme of various derivatives that can be obtained from alcohols.

(5+5)

28a. How is a ketone reduced by LiAlH_4 ? Write the mechanism.

b. Explain the mechanism of Reformatsky and Knoevenagel reactions.

(5+5)
