

M.Sc. DEGREE (C.S.S.) EXAMINATION, MARCH 2015

First Semester

Faculty of Science

Branch : Chemistry

AN 1C 02/AP 1C 02/CH 1C 02/PH 1C 02/POH 1C 02 —STRUCTURAL AND MOLECULAR
ORGANIC CHEMISTRY

(Common to all Branches of Chemistry)

(2012 Admissions)

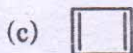
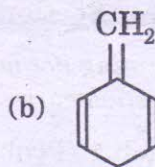
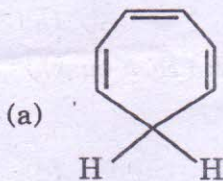
Time : Three Hours

Maximum Weight : 30

Section A

Answer any ten questions.
Each question carries a weight of 1.

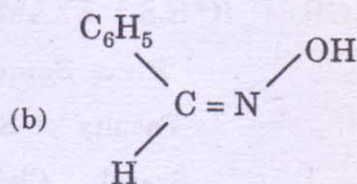
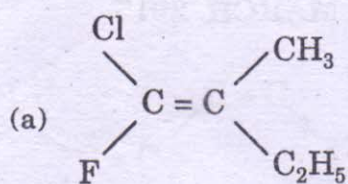
1. Why are following substances non-aromatic ?



2. What is homo aromaticity ? Explain with an example.
3. Explain Huckel's rule with suitable example.
4. Explain Hammond Postulate with example.
5. What are the applications of Taft equation in ester hydrolysis ?
6. Explain the mechanism of esterification of acid by AAL¹ mechanism.
7. What is the necessary and sufficient condition for enantiomerism ?
8. Explain with example how chirality arise in biphenyl system.
9. Write the stable conformation of trans - 4 - t - batyl cyclo hexanol.

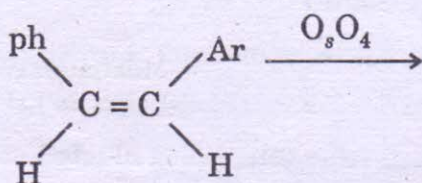
Turn over

10. Name the following compounds as E, Z or syn—anti.



11. What is meant by conformational descriptors ?

12. Predict the stereo chemistry of the product in the following reaction



13. Define optical activity. How is that substituted spiranes show optical activity.

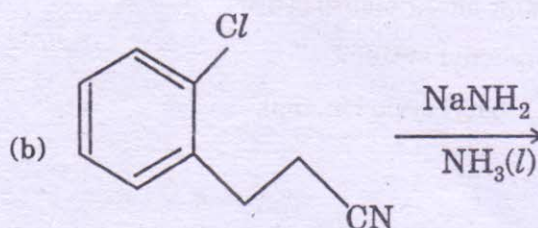
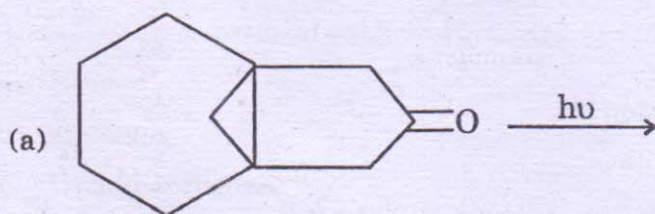
(10 × 1 = 10)

Section B

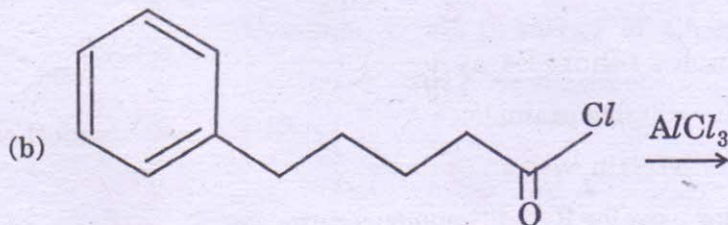
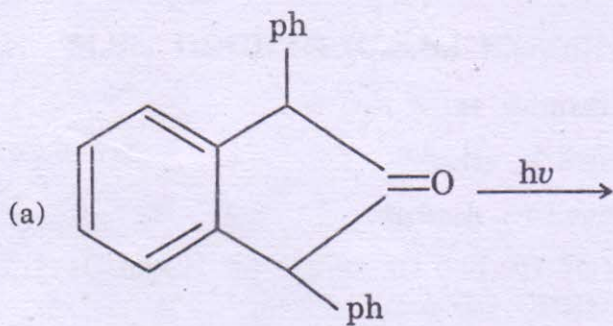
Answer five questions. By attempting not more than 3 questions from each bunch.
Each question carries a weight of 2.

Bunch 1 (Problem type)

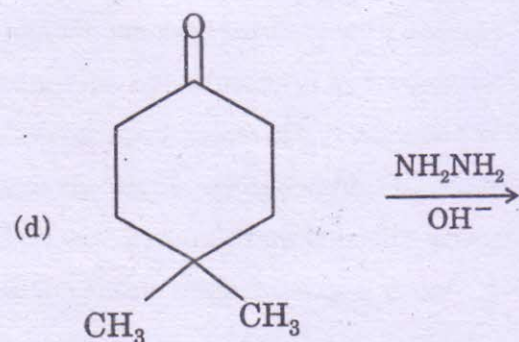
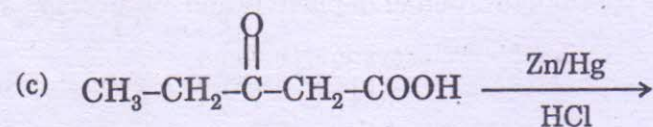
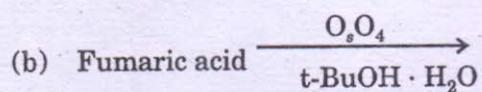
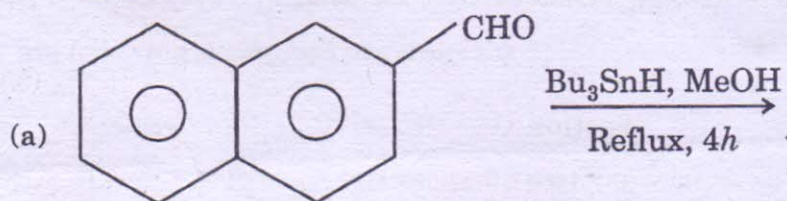
14. Predict the product/(s) formed and outline the mechanism :



15. Predict the product(s) and explain the mechanism.

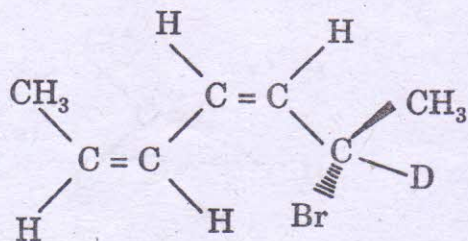


16. Predict the product :



Turn over

17. How many isomers are possible for the following structure ? Draw them.



Bunch 2 (Short Essay Type)

18. Explain Benzyne mechanism with suitable example.
19. What is Paterno-Buchi reaction ? Explain with an example.
20. Explain Cahn-in gold-Prelog rules used for R and S nomenclature.
21. Discuss the factors affecting ion formational stability of molecules.

(5 × 2 = 10)

Section C

*Answer any two questions.
Each question carries a weight of 5.*

22. Discuss the mechanism of base catalysed ester hydrolysis.
23. Describe briefly the photochemistry of nitro and azo compounds.
24. Explain the stereochemistry and absolute configuration of bi-phenyls and ansa compounds.
25. Illustrate the conformational studies of cycli and a cyclic system. Such as :
 - (a) Ethane.
 - (b) Decalins.
 - (c) Cyclo hexane.

(2 × 5 = 10)