

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)

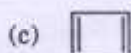
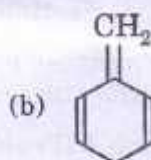
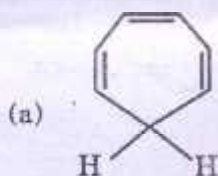
Time : Three Hours

Maximum Weight : 30

Section A

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

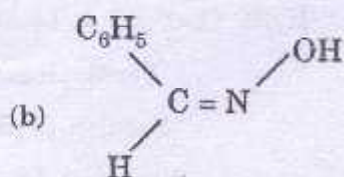
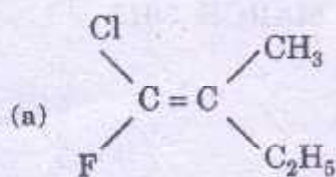
1. Why are following substances non-aromatic ?



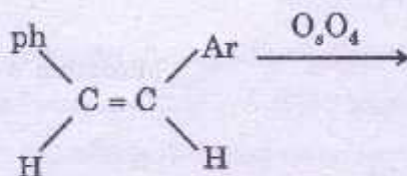
2. What is homo aromaticity ? Explain with an example.
3. Explain Huckel's rule with suitable example.
4. Explain Hammond Postulate with example.
5. What are the applications of Taft equation in ester hydrolysis ?
6. Explain the mechanism of esterification of acid by AAL¹ mechanism.
7. What is the necessary 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.

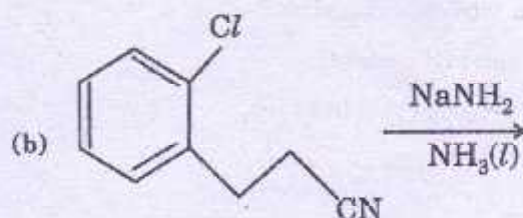
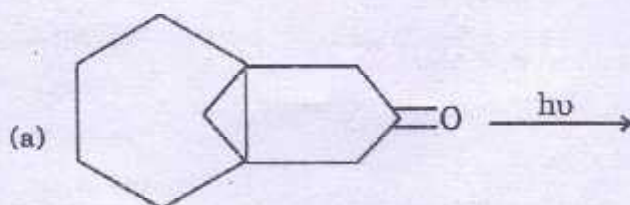
(10 × 1 = 10)

Section B

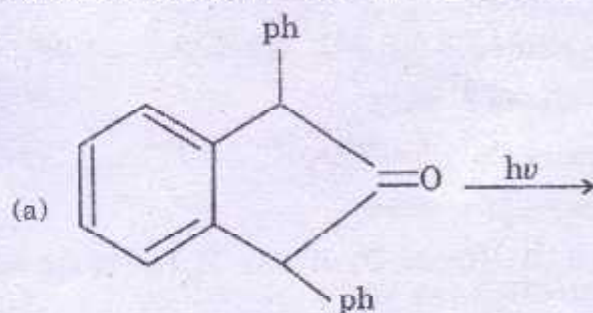
Answer five questions. By attempting not more than 3 questions from each bunch.
 Each question carries a weight of 2.

Bunch 1 (Problem type)

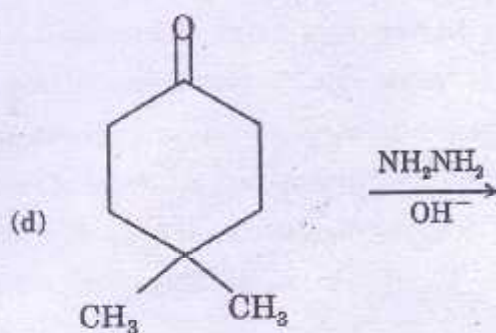
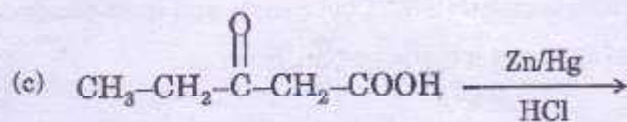
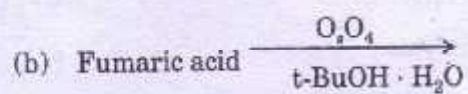
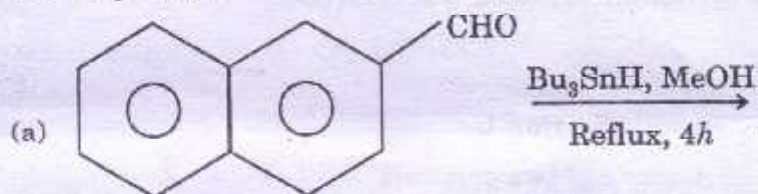
14. Predict the product/(s) formed and outline the mechanism :



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

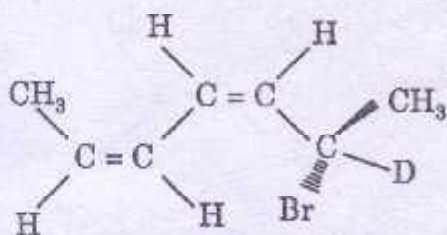


16. Predict the product :



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 Patterno-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)