

Reg. No. :

Name :

Fourth Semester B.Sc. Degree Examination, July 2019

(First Degree Programme under CBCSS)

Chemistry

Core Course

CH 1441 : ORGANIC CHEMISTRY I

(2013 - 2016 Admns)

Time : 3 Hours

Max. Marks : 80

SECTION – A (ONE WORD)

Answer *all* questions. Each question carries **1** mark.

1. Give example for an axially chiral molecule.
2. Carbohydrates are better represented by _____ projection formula.
3. Chloro acetic acid is more acidic than acetic acid. Justify.
4. The hybridisation of nitrogen in pyridine is _____.
5. What will be the major product obtained on adding HCl to 3,3-dimethylbut-1-ene?
6. Acetylene on reaction with ozone followed by hydrolysis will yield _____.

7. Out of the following groups which one is *meta* directing
- (a) -F,
 - (b) -CH = CHR,
 - (c) -CHO,
 - (d) -NHR
8. Draw the structure of 6-amino-2-naphthol.
9. Number of π electrons in cyclopentadienyl cation is _____.
10. Metals in Grignard reagent and Reformatsky reactions are _____ and _____.

(10 × 1 = 10 Marks)

SECTION – B (SHORT ANSWER)

Answer any **eight** questions. Each question carries **2** marks.

11. What happens when toluene is treated with alkaline KMnO_4 ? Alkaline condition is preferred in this reaction. Why?
12. Write the **R** and **S** configurations of lactic acid.
13. Give example for stereoselective reaction.
14. Identify the differences between conformations and configurations.
15. Explicit the importance of stereochemistry in pharmaceutical field.
16. If indole is protonated the stability will decrease. Justify.
17. Explain hyper conjugation effect with an example.
18. What are Grignard reagents? How it can be synthesized?

19. Explain the *erythro* and *threo* classification of stereoisomers.
20. Electromeric effect is very important in explaining electrophilic and nucleophilic reactions of carbonyl compounds. Justify.
21. In dehydrohalogenation usually Saytzeff product is preferred. Give reason.
22. Write a note about atrop isomers.

(8 × 2 = 16 Marks)

SECTION – C (SHORT ESSAY)

Answer **any six** questions. Each question carries **4** marks.

23. α substitution of naphthalene is preferred over β substitution in aromatic electrophilic reaction. Give reasonable explanation.
24. Explain the directive influence of -Cl and -NO₂ groups on electrophilic and nucleophilic substitution to benzene.
25. Explain the mechanism of Friedel-Crafts acylation of benzene.
26. Draw and explain the energy profile diagram for conformations of cyclohexane.
27. Explain the optical isomerism in tartaric acid with **R** and **S** representations.
28. Give four synthetic applications of ethylacetoacetate.
29. How ozonolysis helps in determining the position of double bond in alkenes?
30. How resonance energy of benzene can be calculated from heat of hydrogenation?
31. Briefly explain the mechanism of E1 and E2 reaction. (6 × 4 = 24 Marks)

SECTION – D (ESSAY)

Answer **any two** questions. Each question carries **15** marks.

32. (a) Discuss the formation, stability and hybridisation of carbanions, carbenes and free radicals.
- (b) Write a note about **Walden** inversion. **(12 + 3 Marks)**
33. (a) Calculate the angle strain for various alicyclic compounds and predict their relative stability.
- (b) How we can determine the specific rotation of an enantiomer?
- (10 + 5 Marks)**
34. Explain at least five methods that will help us to determine mechanism of reaction. **(15 Marks)**
35. (a) Explain the factors that will affect the course of S_N1 and S_N2 reactions.
- (b) Discuss two methods for cis-hydroxylation of alkene. **(10 + 5 Marks)**
- (2 × 15 = 30 Marks)**
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