

Reg. No. :

Name :

Fourth Semester B.Sc. Degree Examination, May 2021

First Degree Programme under CBCSS

CHEMISTRY

Core Course III

CH 1441 – ORGANIC CHEMISTRY I

(2013, 2015 – 2016 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

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

1. What are nucleophiles? Give one example.

2. What is meant by inductive effect?

3. Complete the following



4. What happens when Aniline is brominated?

5. Give two examples for non-benzenoid aromatic compounds.

6. Draw the structure of Z - 1 - bromo 1 -chloro propane.

7. How $\text{C}_2\text{H}_5\text{MgI}$ is prepared?

8. What are diastereomers?
9. What is torsional strain?
10. What are meso compounds?

(10 × 1 = 10 Marks)

SECTION – B

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

11. Distinguish between homolytic and heterolytic bond fission.
12. Explain Markownikoff's rule with a suitable example.
13. What is ozonolysis? What is its use in structure elucidation?
14. What is aromaticity?
15. Give the mechanism of nitration of benzene.
16. What is cis-hydroxylation reaction?
17. What is steric effect?
18. Explain Diels-Alder reaction.
19. Draw the Newman projections of the conformations of n-butane.
20. What is meant by racemization?
21. What are erythro and threo isomers? Explain with an example.
22. How will you convert benzene to acetophenone?

(8 × 2 = 16 Marks)

SECTION – C

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

23. Explain the mechanism of E_2 elimination.
24. Arrange the following acids in the increasing order of acidity. Justify your answer.
(a) acetic acid (b) chloroacetic acid (c) dichloroacetic acid (d) trichloroacetic acid.
25. What are the products obtained when 2- Butanol is treated with $\text{con. H}_2\text{SO}_4$? Which is the major product and why?
26. Explain Reformatsky reaction.
27. Explain Benzyne intermediate mechanism with an example.
28. What is hydroboration? Give an example.
29. Write notes on Walden inversion.
30. Distinguish between conformations and configurations.
31. Explain the optical Isomerism of tartaric acid.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Discuss the structure, Hybridisation and stability of .
(a) Alkyl cations (carbocations) (b) alkyl anions (carbanions) (c) free radicals.
33. (a) What are electrophilic substitution reactions? Give three electrophilic substitution reactions of naphthalene Give its mechanism
(b) Explain any two methods for the resolution of racemic mixture.
34. Discuss the conformational isomerism of cyclohexane and methyl cyclohexane. Explain the relative stability of the conformers.
35. How will you convert (a) malonic ester to Barbituric acid (b) malonic ester to crotonic acid (c) acetoacetic ester to glutaric acid (d) acetoacetic ester to gamma keto valeric acid (e) acetoacetic ester to 1, 3-butane diol.

(2 × 15 = 30 Marks)