

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2023

(Regular/Improvement/Supplementary)

CHEMISTRY: COMPLEMENTARY COURSE FOR PHYSICS, BOTANY AND ZOOLOGY

GCHE3C03T: ORGANIC CHEMISTRY

Time: 2 Hours

Maximum Marks: 60

**SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 20 Marks)**

1. What is meant by homolytic fission of a bond? What are the products of such fission?
2. Name the factors that stabilize carbocations.
3. Draw the Sawhorse and Newman projections of the conformations of ethane.
4. Using a suitable example, explain how geometrical isomers can be distinguished?
5. Explain the terms- dextrorotatory and laevorotatory.
6. Give two examples each for *ortho-para* directing and *meta*-directing groups.
7. How can the aromaticity of pyridine and pyrrole be explained?
8. Write down the method of preparation of methyl orange.
9. How are carbohydrates classified? Give one example for each.
10. What is meant by denaturation of proteins? Give an example.
11. Draw the structure of nicotine.
12. Write down the chief source of citral and its uses.

**SECTION B: Answer the following questions. Each carries *five* marks.
(Ceiling 30 Marks)**

13. Draw the conformations of methylcyclohexane and discuss their relative stabilities.
14. What is meant by aromatic electrophilic substitution? Give the mechanism of nitration on benzene.
15. What is meant by S_N1 reaction? Give an example and explain its mechanism.
16. Illustrate the following reactions: (i) Hoffmann's bromamide reaction; (ii) Hofmann's carbylamine reaction.

(PTO)

17. What is meant by DNA fingerprinting? Explain its applications.
18. Illustrating examples, explain any two different nucleophilic addition reactions undergone by aldehydes.
19. What are the functions and characteristics of enzymes?

SECTION C: Answer any *one* question. Each carries *ten* marks.

20. Discuss and illustrate the significance of various electron displacement effects in organic molecules.
21. a) How is chlorobenzene converted to phenol?
b) Explain the reason for the acidity of phenol and how its acidity is affected by substituents on the benzene ring.

(1 x 10 = 10 Marks)