Reg. No. : .....

Name : .....

T – 1644

Sixth Semester B.Sc. Degree Examination, April 2024

First Degree Programme under CBCSS

Chemistry

Core Course XI

CH 1642 : ORGANIC CHEMISTRY III

(2017-2019 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Answer in **one** word to maximum **two** sentences. Each question carries **1** mark.

1. What are polysaccharides? Give an example.
2. What are the products obtained when sucrose undergoes hydrolysis in presence of the enzyme invertase?
3. Give the structure of aspirin.
4. In one strand of DNA has the sequence ATGCTTCA. What is the sequence the complementary strand?
5. Define the term saponification number for a fat or oil.
6. What is a copolymer?
7. How do stabilizers affect polymers?
8. Name and formulate a compound containing an active methylene group.
9. What are Gilman reagents?
10. Draw the structure of coniine.

(10 × 1 = 10 Ma

SECTION – B

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

11. How can glucose be converted to (a) gluconic acid (b) Hexane.
12. Write any two industrial applications of cellulose.
13. Name a synthetic rubber and outline its method of preparation.
14. Cite an example for how a biodegradable polymer can be prepared.
15. List any two biological functions of lipids.
16. Explain the term vulcanization.
17. Represent any one synthesis of glycine.
18. What are synthetic detergents? Give example.
19. What is the significance of number average molecular weight (M_n) on polymers?
20. How can n-propyl lithium be converted to butanoic acid?
21. Give any two synthetic applications of $NaBH_4$.
22. Differentiate between essential and non-essential amino acids.

($8 \times 2 = 16$ Marks

SECTION – C

Short Essay type. Answer any **six** questions. Each question carries **4** marks.

23. Explain the Fischer-indole synthesis.
24. Discuss the structure of sucrose.
25. Briefly discuss the factors that stabilize the tertiary structure of a protein.
26. Explain the source, structure and uses of citral.
27. Outline the synthesis of sulphanilamide.

28. Predict the structure of the product of the following reactions.

(a)  $\xrightarrow[\Delta]{SeO_2}$? (b)  $\xrightarrow[\Delta]{SeO_2}$?

29. Illustrate with equations the utility of Grignard reagents in the synthesis of (a) Ketones (b) Carboxylic acids.

30. Explain the double helical structure of DNA.

31. Cite an important difference between thermoplastics and thermosetting plastics.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Explain with suitable equations how the following conversions can be effected:

(a) Glucose to Fructose

(b) Fructose to Glucose.

33. Discuss the principle of solid phase peptide synthesis with suitable illustration.

34. What are vitamins? How are they classified? Discuss its structure, sources, functions and deficiency diseases.

35. Illustrate the mechanism of the following polymerization reactions with suitable examples.

(a) Cationic polymerization reaction

(b) Anionic polymerization reaction

(c) Free radical polymerization reaction.

(2 × 15 = 30 Marks)
