

Reg. No. :

Name :

Third Semester B.Sc. Degree Examination, January 2023

First Degree Programme Under CBCSS

Chemistry

Complementary Course for Zoology

CH 1331.4 – ORGANIC CHEMISTRY

(2019 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

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

1. When ninhydrin test is done, the presence of which functional group in an amino acid will cause the development of violet colour.
2. What are coenzymes? Give one example.
3. Name the monosaccharide which contains ketonic group.
4. What is neoprene?
5. Give one example of each of electrophile and nucleophile.
6. Suggest the hybridization of carbanion.
7. What is the criterion for optical activity?
8. E-Z system of nomenclature is used for naming which type of isomers?

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9. Name the pyrimidine base present in RNA, but not in DNA.
10. Give the zwitter ion structure of glycine.

(10 × 1 = 10 Marks)

SECTION – B

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

11. Outline a synthesis of phenyl alanine.
12. What are basic amino acids? Give two examples.
13. How does DNA differ from RNA with respect to (a) sugar and (b) bases?
14. Define epimers.
15. Classify the carbohydrates on the basis of behavior towards hydrolysis.
16. What are phospholipids?
17. What is saponification?
18. Write a note on the role of DNA in biosynthesis of proteins.
19. Write a note on elastomers.
20. What do you understand by the terms +M and –M effects?
21. Between dimethylamine and methylamine, which is the stronger base and why?
22. What are elastic fibres?
23. What is hyperconjugation? Explain with an example.
24. What are enantiomers?
25. What conformational changes occur as the temperature rises?
26. Are enantiomers possible in molecules that do not have chiral carbon atom?

(8 × 2 = 16 Marks)

SECTION – C

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

27. Write the different steps involved in the synthesis of a tripeptide having three different amino acid groups.
28. Write a note on iodine value of an oil.
29. Amino acids containing both the carboxyl and amino groups unprotected are not suitable for peptide synthesis. Substantiate this statement.
30. Discuss the role of DNA in biosynthesis of proteins.
31. Define primary structure of protein? What are the important methods used for the elucidation of the primary structure of protein?
32. Explain the following with suitable reasons.
 - (a) Benzoic acid is a weaker acid than p-nitrobenzoic acid
 - (b) Aniline is a stronger base than p-nitroaniline
33. What are lipids? Give its classification.
34. Discuss about vulcanization of rubbers.
35. Discuss about the classification of polymers into synthetic and natural polymers. Explain with examples.
36. Discuss the pyranoside structures of glucose and fructose.
37. Discuss the mechanism of Markonikoff addition to alkenes.
38. Explain why the chair conformation of cyclohexane is more stable than boat conformation of cyclohexane.

(6 × 4 = 24 Marks)

SECTION – D

Answer any two questions. Each question carries 15 marks.

39. Discuss about mutarotation and epimerization.
40. (a) Discuss about different conformations of propane and butane.
(b) Write a note on optical isomerism due to restricted rotation.
41. Discuss about enzyme catalysis. Derive Michaelis – Menton equation.
42. Discuss the structure of DNA and RNA.
43. What are S_N1 and S_N2 reactions? Give the mechanism of each type of reactions.
44. Discuss the preparation and applications of the synthetic rubbers Buna-N and butyl rubber.

(2 × 15 = 30 Marks)