

(7 pages)

Reg. No. :

Code No. : 20322 E Sub. Code : CMCH 51

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2025.

Fifth Semester

Chemistry — Core

ORGANIC CHEMISTRY – II

(For those who joined in July 2021-2022 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following is an example of optically active compounds without chirality
 - (a) Tartaric acid
 - (b) Sulphonium salt
 - (c) Diphenic acid
 - (d) Glyceraldehyde

2. Find the number of stereo isomers for $\text{CH}_3 - \text{CHOH} - \text{CH} = \text{CH} - \text{CH}_3$

- (a) 1
- (b) 2
- (c) 3
- (d) 4

3. Urea exhibits _____ tautomerism

- (a) amido - imido
- (b) keto - enol
- (c) nitro - acinitro
- (d) nitroso - isonitroso

4. In which type of projection we can get staggered and eclipsed conformations?

- (a) Newman projection
- (b) Fischer projection
- (c) Sawhorse projection
- (d) Wedge projection

5. Amino acids are mostly synthesised from

- (a) fatty acids
- (b) α - ketoglutaric acid
- (c) mineral salts
- (d) volatile acid

6. Fructose is used as
(a) Reducing agent (b) Flavouring agent
(c) Oxidising agent (d) Sweetening agent
7. The number of delocalised π electrons in the benzene ring are
(a) 8 (b) 2
(c) 6 (d) 4
8. Which of the following act as electrophile in halogenation?
(a) Halonium ion (b) Sulphonium ion
(c) Nitronium ion (d) A cylum ion
9. Which of the following five membered ring is most resonance stabilized?
(a) Furan (b) Pyrrole
(c) Pyridine (d) Thiophene
10. The reagent used in the chichibabin reaction is
(a) Sodamide (b) sodalime
(c) NaOH (d) NH_3

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain elements of symmetry with suitable examples.
Or
(b) Discuss the optical activity of spiranes.
12. (a) Explain the with suitable example of E, Z system of nomenclature of geometrical isomerism.
Or
(b) Discuss the amido – imido tautomerism with suitable example.
13. (a) Write any three methods of synthesis of amino acids.
Or
(b) Explain Haworth's structure of cellulose.

14. (a) Define aromaticity. Explain the Huckel's rule with suitable examples.

Or

- (b) Discuss the Benzyne mechanism with suitable examples.

15. (a) Pyrrole resembles with phenol give suitable examples.

Or

- (b) Explain the electrophilic substitution reactions of isoquinoline.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write a short note on Racemisation.

Or

- (b) Explain stereo specific reaction with suitable examples.

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17. (a) Describe the keto enol tautomerism with example.

Or

- (b) Discuss the conformational analysis of n-butane? Draw the energy diagram and saw horse formula of anti and fully eclipsed forms of n-butane.

18. (a) What are the various oxidation and reduction products of glucose and fructose?

Or

- (b) Describe the properties, uses and structure of starch.

19. (a) Describe the mechanism of Friedel Crafts alkylation and acylation.

Or

- (b) Explain the mechanism of SN^1 and SN^2 reactions in aromatic compounds.

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20. (a) Write the synthesis of pyridine and explain the molecular orbital picture of pyridine.

Or

- (b) Write down the synthesis of skraup synthesis and Bischler – Nepieralski synthesis.
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