

(7 pages)

Reg. No. : _____

Code No. : 20063 E Sub. Code : AMCH 53

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

Fifth Semester

Chemistry - Core

ORGANIC CHEMISTRY - III

(For those who joined in July 2020 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

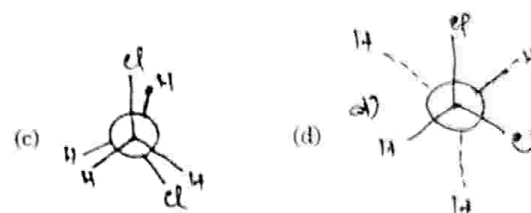
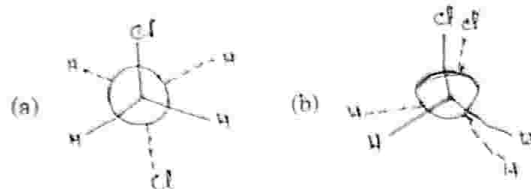
Answer ALL questions.

Choose the correct answer :

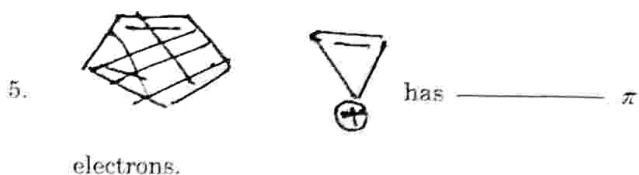
- Which one is essential condition for optical isomerism?
 - Presence of symmetric carbon
 - Presence of one sp^3 carbon atom
 - Presence of chiral carbon atom
 - Absence of sp^3 carbon atom

- Antimers are
 - Enantiomers
 - Diastereoisomers
 - Epimers
 - None

- Which one among the following is more stable?



- Which among the following is related to geometrical isomerism?
 - Lactic acid
 - Acetic acid
 - Fumaric acid
 - All the above



- (a) 8 (b) 4
(c) 6 (d) 2

6. Which among the following is a deactivating group?

- (a) -OH (b) -CH₃
(c) -NO₂ (d) -NH₂

7. _____ is a six membered heterocyclic compound.

- (a) Pyrrole (b) Piperidine
(c) Furan (d) Thiophene

8. In pyridine molecule the nitrogen atom is

- (a) SP (b) SP²
(c) SP³ (d) SP^{3d}

9. Naphthalene on oxidation with V₂O₅ gives

- (a) Pthalic acid
(b) Pthalonic acid
(c) 1, 4. Naphtha-quinone
(d) Pthalic anhydride

10. Functional group present in azo dyes is

- (a) -N = 0 (b) -N = N -
(c) $\begin{array}{c} \oplus \\ -N = 0 \\ | \\ O \ominus \end{array}$ (d) $\begin{array}{c} O \\ || \\ -C - \end{array}$

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Draw the various Newmann projection formula of n-butane.

Or

(b) Explain the types of symmetry elements.

12. (a) What are geometrical isomers? Draw the geometrical isomers to but-2-ene.

Or

(b) Draw the E and Z notations of oximes.

13. (a) Write down the mechanism involves in sulphonation of benzene.

Or

- (b) Write notes on
- Activating groups
 - Deactivating groups.
14. (a) Explain Bischler-Nepieralski synthesis.

Or

- (b) Compare the basicity of piperidine and pyrrole.
15. (a) How is indigo dye prepared? Mention its uses.

Or

- (b) How is the following prepared?
- Malachite green
 - Alizarin

PART C — (5 × 8 = 40 marks)

Answer ALL questions by choosing (a) or (b).
Each answer should not exceed 600 words.

16. (a) Write notes on:
- Partial asymmetric synthesis
 - R and S notations of lactic acid
 - Optical activity of allenes.

Or

- (b) (i) Explain the optical activities of biphenyls, and spiranes.
- (ii) State Cahn-Ingold-Prelog rules.
17. (a) Discuss the conformations of cyclohexane and mono substituted cyclo hexanes and their stability.

Or

- (b) Explain the factors affecting the stability of conformations.

18. (a) Explain the mechanism of the following

(i) Friedel-Crafts reaction

(ii) Nitration in benzene.

Or

(b) Explain the following

(i) S_N1 Reaction with mechanism

(ii) S_N2 Reaction with mechanism

19. (a) Explain the following:

(i) Skraup synthesis

(ii) Any two nucleophilic substitution reaction of pyridine.

Or

(b) Explain the following reactions

(i) Fisher indole synthesis

(ii) Electrophilic substitution reaction of isoquinoline.

20. (a) Classify dyes based on their structure.

Or

(b) Derive the structure of Naphthalene.