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Reg. No. :

Code No. : 20060 E Sub. Code : AMCH 41

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

Fourth Semester

Chemistry — Core

ORGANIC CHEMISTRY — II

(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 :

1. Wittig reaction is the conversion of carbonyl compounds into alkenes with _____ reagent.
- (a) Grignard
 - (b) Triphenyl phosphonium ylide
 - (c) Phenyl hydrazine
 - (d) Semi carbazide

2. Aldehyde that do not undergo alcohol condensation is _____.

- (a) trichloro acetaldehyde
- (b) propanaldehyde
- (c) 2-phenyl acetaldehyde
- (d) none

3. Which is the most acidic?

- (a) Cl_2CHCOOH (b) ClCH_2COOH
- (c) CH_3COOH (d) Cl_3CCOOH

4. $\text{HOOC}-\text{COOH} \xrightarrow[190^\circ]{4}$ Oxalic acid $\text{X} + \text{CO}_2$. X is _____.

- (a) CH_3COOH (b) HIOOH
- (c) $\text{CH}_3\text{CH}_2\text{OH}$ (d) CH_3OH

5. _____ is formed when methyl-lithium treated with water.

- (a) Methanol (b) Ethanol
- (c) Methane (d) Ethane

6. Diethyl sulphide is formed when _____ is treated with ethyl bromide.

- (a) Potassium sulphide
- (b) Sodium hydrosulphide
- (c) Sulphuric acid
- (d) Sulphonyl chloride

7. In Keto-Enol tautomerism, the presence of which type of hydrogen is must

- (a) γ
- (b) ρ
- (c) δ
- (d) α

8. _____ is the colour developed when ethyl acetoacetate is treated with copper acetate.

- (a) Red
- (b) Green
- (c) Blue
- (d) Orange

9. Which of the following is least stable conformation?

- (a) Anti
- (b) Gauche
- (c) Staggered
- (d) Eclipsed

10. Which of the following correctly orders the relative steric energies of conformations of cyclohexane?

- (a) twist-boat < boat < chair
- (b) boat < twist-boat < chair
- (c) chair < twist-boat < boat
- (d) chair < boat < twist-boat

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the reactivity of carbonyl groups by taking suitable example.

Or

(b) Discuss the mechanism of cross aldol condensation.

12. (a) How is α , β and γ hydroxy acids distinguished?

Or

(b) Explain the mechanism of esterification with an example.

13. (a) How is the following prepared from diethylzinc?

- (i) 1-propanol
- (ii) 2-butanol
- (iii) 2 Methyl-2-butanol.

Or

(b) How are the following prepared?

- (i) Sulphonal
- (ii) Sulphone.

14. (a) How will you justify the reactivity of methyleno group by taking suitable example?

Or

(b) What are the evidences that support amino-3 mido tautomerism?

15. (a) Explain the preparation of muscone. Draw its structure.

Or

(b) Discuss Coluson and Moffit's concept.

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PART C — (5 × 8 = 40 marks)

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

16. (a) Discuss the mechanism of (i) Nucleophilic addition reaction of HCN (ii) Aldol Condensation.

Or

(b) Explain the following reactions with suitable example? What are their significance?

- (i) Wolff-Kinhner reduction
- (ii) Wittig reaction.

17. (a) What is acidic hydrolysis of ester? Explain the mechanism with evidences in support of it.

Or

(b) How are the following prepared? Mention their use.

- (i) Oxalic acid
- (ii) Citric acid
- (iii) Urea.

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18. (a) How the following are prepared from Grignard reagent?

- (i) Ethane
- (ii) Tertiary alcohol
- (iii) Acetone
- (iv) Carboxylic acid.

Or

(b) How are the following prepared? Explain any two chemical properties of them.

- (i) Diethyl sulphide
- (ii) Ethane thiol.

19. (a) Explain the types of tautomerism.

Or

(b) How are the following prepared from ethyl aceto acetate?

- (i) Butanone
- (ii) Acetone
- (iii) Laevulic acid.

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20. (a) Discuss Baeyer's strain theory. What are its limitation?

Or

(b) Explain conformational analysis of cyclohexane with energy diagram.

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