

(7 pages)

Reg. No. :

Code No. : 20058 E Sub. Code : CMCH 21

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

Second Semester

Chemistry – Core

ORGANIC CHEMISTRY – I

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

Time : Three hours

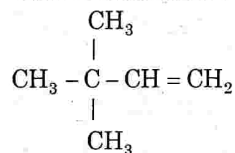
Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. IUPAC name of the compound



- (a) 1,1-dimethyl-1,3-butane
(b) 1,1,1-trimethyl-3-propane
(c) 3,3-dimethyl-1-butene
(d) 3,3,3-trimethyl propane

2. The order of stability of carbonium ions is
(a) Tertiary > secondary > primary
(b) Secondary > tertiary > primary
(c) Primary > secondary > tertiary
(d) Primary > tertiary > secondary
3. Which of the following is the best leaving group?
(a) F^- (b) Cl^-
(c) Br^- (d) I^-
4. The reaction
 $\text{CH}_2 = \text{CH}_2 + \text{Br}_2 \rightarrow \text{CH}_3\text{CH}_2\text{OH} + \text{Br}^-$ is an example of
(a) Substitution reaction
(b) Oxidation reaction
(c) Addition reaction
(d) Double decomposition reaction
5. Which of the following compound do not show aldol condensation
(a) CH_3CHO (b) $\text{CH}_3\text{CH}_2\text{CHO}$
(c) CH_3COCH_3 (d) HCHO

6. Reduction of an aldehyde or ketone in presence of aluminium isopropoxide

$[(\text{CH}_3)_2\text{CHO}]_3\text{Al}$ to give corresponding alcohol is called

- (a) Clemmenson reduction
- (b) Meerwein-Ponndorf -Verley reduction
- (c) Wolf-Kishner reduction
- (d) Stephen's reduction

7. Aldehydes and ketones react with α -bromo esters in the presence of metallic zinc to give β hydroxy esters. This is an example of

- (a) Claisen condensation
- (b) Zeisel's reaction
- (c) Knoevenagal reaction
- (d) Reformatsky reaction

8. Which of the following are not organosulphur compounds?

- (a) Sulphonic acids
- (b) Tertiary amines
- (c) Thioethers
- (d) Thioalcohols

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9. The energy difference between the chair and the boat formation of cyclohexane is _____.

- (a) 44 KJ
- (b) 24 KJ
- (c) 34 KJ
- (d) 68 KJ

10. The most stable conformation of butane is

- (a) Anti
- (b) Skew
- (c) Gauche
- (d) Partially eclipsed

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 IUPAC rules for naming of branched alkanes with examples.

Or

(b) Write a note on homolytic and heterolytic fission.

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[P.T.O.]

12. (a) Explain the mechanism of S_N2 reaction

Or

(b) What is peroxide effect? Give its mechanism.

13. (a) Discuss the mechanism of Aldol condensation.

Or

(b) Describe Hell-Volhard-Zelinsky reaction for preparing α -halo acids.

14. (a) Explain the preparation and properties of methyl lithium.

Or

(b) Describe the methods for the preparation of benzene sulphonic acid.

15. (a) Describe the preparation and uses of diethyl malonate.

Or

(b) Discuss the various conformations of substituted cyclohexane.

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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) Explain steric effect and hyperconjugation effect with suitable example.

Or

(b) Write a note on formation, structure and stability of carbenes and nitrenes.

17. (a) Describe Hoffmann's rule and Saytzeff's rule with an example.

Or

(b) Explain the mechanism of 1,2 addition and 1,4 addition reaction.

18. (a) How is oxalic acid obtained? Mention its properties and uses.

Or

(b) Explain the following reactions

(i) Knoevenagel reaction

(ii) Wolf-Kishner reduction.

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19. (a) Write briefly the preparation and properties of Grignard reagent.

Or

(b) Explain the methods of preparation and properties of thioalcohol and thioether.

20. (a) Discuss the various conformations of n-butane with energy level diagram.

Or

(b) Write briefly about conformation of 1,3 and 1,4 disubstituted cyclohexanes.
