

(6 pages)

Reg. No. : .....

Code No. : 20319 E Sub. Code : CMCH 21

B.Sc. (CBCS) DEGREE EXAMINATION,  
APRIL 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. Carbanion is a/an \_\_\_\_\_.
- (a) Free radical
  - (b) Electron rich carbon
  - (c) Electron deficient carbon
  - (d) None of these

2. -I group is \_\_\_\_\_.
- (a) -OH
  - (b) -NH<sub>2</sub>
  - (c) -COOH
  - (d) -CH<sub>3</sub>

3. Butadiene has \_\_\_\_\_.
- (a) Cumulated double bond
  - (b) Conjugated double bond
  - (c) One double bond only
  - (d) Three double bond

4. In E<sub>1</sub>-elimination reaction, the reaction follows
- (a) First order kinetics
  - (b) Primary isotopic effect
  - (c) The rearrangement
  - (d) All the above

5. Which of the following is adipic acid?
- (a) (CH<sub>2</sub>)<sub>4</sub>(COOH)<sub>2</sub>
  - (b) (CH<sub>2</sub>)<sub>2</sub>(COOH)<sub>2</sub>
  - (c) CH<sub>3</sub>CH(OH)COOH
  - (d) (CH<sub>2</sub>)<sub>5</sub>(COOH)<sub>2</sub>

6. Which hydroxy acids on heating gives lactides?  
 (a)  $\alpha$ -hydroxy acid (b)  $\beta$ -hydroxy acid  
 (c)  $\gamma$ -hydroxy acid (d)  $\delta$ -hydroxy acid
7. Grignard reagent do not show any reaction with  
 (a) Alkanones (b) Acyl halides  
 (c) Alkoxy alkanes (d) Alkyl alkanoates
8. Formaldehyde reacts with Grignard reagent to form \_\_\_\_\_  
 (a) Primary alcohol (b) Secondary alcohol  
 (c) Tertiary alcohol (d) All the above
9. Identify the most stable conformation of n-butane  
 (a) Syn form (b) Anti-form  
 (c) Gauche form (d) Skew form
10. Which of the following will have tautomers?  
 (a)  $C_6H_5COOEt$   
 (b)  $CH_3COOEt$   
 (c)  $CH_3CH_2COOEt$   
 (d)  $CH_3COCH_2COOEt$

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PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 200 words.

11. (a) Explain the inductive effect with an example.  
 Or  
 (b) What are free radicals? How are they classified? Give one example for each type.
12. (a) Explain Markownikoff rule with an example.  
 Or  
 (b) Compare 1,2 and 1,4 addition reaction of 1,3-butadiene.
13. (a) Explain the action of heat on  $\alpha$ ,  $\beta$  and  $\gamma$  hydroxy acids.  
 Or  
 (b) Write any two uses for oxalic acid and succinic acid.
14. (a) Explain the reformatsky reaction.  
 Or  
 (b) Write short notes on the synthesis of Saccharin.

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[P.T.O.]

15. (a) Write the preparation for (i) Crotonic acid  
(ii) Succinic acid.

Or

- (b) Explain the conformational analysis of ethane.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) What is Carbanion? Explain its hybridisation and shape.

Or

- (b) Explain the following with example.

- (i) Hyperconjugation  
(ii) Mesomeric effect.

17. (a) (i) Compare the stability of conjugated and isolated dienes.

- (ii) Explain Diels-Alder reaction with an example.

Or

- (b) (i) Explain Hoffmann's elimination reaction.

- (ii) Write the preparation and uses of allyl chloride.

18. (a) Discuss the preparation and two uses of (i) oxalic acid (ii) succinic acid.

Or

- (b) Write notes on : (i) Wittig reaction (ii) Wolff-Kishner reaction.

19. (a) Give any three synthetic uses of Grignard reagent.

Or

- (b) Discuss the preparation for the following : (i) Thioethers (ii) Sulphonal (iii) Mustard gas.

20. (a) Explain the conformational analysis of n-butane.

Or

- (b) How will you synthesize the following from malonic ester?

- (i) Succinic acid  
(ii) Adipic acid  
(iii) Aceto acetic acid.