

(8 pages)

Reg. No. :

Code No. : 10447 E Sub. Code : CMCH 21

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Second Semester

Chemistry — Core

ORGANIC CHEMISTRY — I

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which among the following is not associated with aliphatic compounds?
 - (a) contain straight chain
 - (b) contain $(4n + 2)\pi$ electrons
 - (c) contain branched chain
 - (d) all the above

2. Which of the following is a permanent electron displacement effect?
 - (a) Inductomeric (b) Electromeric
 - (c) Inductive (d) All of the mentioned
3. Choose the correct one which will react faster in SN_2 reaction?
 - (a) $CH_3 - CH = CH - Br$
 - (b) $CH_2 = CH - CH_2 - Br$
 - (c) $CH_2 = C = CH - Br$
 - (d) All the above
4. When an unsymmetrical reagent adds on unsymmetrical alkene, the negative part of the reagent gets attached to the carbon of carbon - carbon double bond which carries less number of hydrogen atoms. This rule is called _____
 - (a) Markovnikov rule
 - (b) Anti - Markovnikov rule
 - (c) Saytzeff rule
 - (d) None



5. Which of the following will not give aldol condensation?

- (a) phenyl acetaldehyde
- (b) 2-methyl pentanal
- (c) 1-phenyl propanone
- (d) benzaldehyde

6. The correct order of increasing acidic strength is _____

- (a) Phenol < Ethanol < Chloroacetic acid < Acetic acid
- (b) Ethanol < phenol < chloroacetic acid < acetic acid
- (c) Ethanol < phenol < acetic acid < chloroacetic acid
- (d) Chloroacetic acid < acetic acid < phenol < ethanol

7. Organozinc reagent is also known as _____

- (a) Reformatsky enolate
- (b) Grignard reagent
- (c) Tollen's reagent
- (d) None of these

Page 3 Code No. : 10447 E

8. Chloramine T is prepared from _____

- (a) Benzene sulphonic acid
- (b) Benzene sulphonyl chloride
- (c) Toluene sulphonic acid
- (d) Sulphonal

9. Which of the following statement regarding cycloalkanes is wrong?

- (a) Any disubstituted cycloalkane can have cis-trans isomers
- (b) The planar form of any cycloalkane with a ring larger than cyclopropane will not be the most stable conformation
- (c) Cyclopentane is nonpolar to avoid the torsional strain between adjacent C - H bonds
- (d) The least strained form of any unsubstituted cycloalkane is the chair conformation of cyclohexane

Page 4 Code No. : 10447 E

[P.T.O.]



10. In the given conformation, C_2 is rotated about $C_2 - C_3$ bond anticlockwise by an angle of 120° , then the conformation obtained is _____



- (a) Fully eclipsed (b) Partially eclipsed
(c) Staggered (d) Gauche

PART B — (5 × 5 = 25 marks)

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

11. (a) What is nitrene? How is it prepared? Write its structure.
Or
(b) Define (i) Mesomeric effect (ii) Hyper conjugative effect. Give example to illustrate them.
12. (a) Write a mechanism for the peroxide initiated addition of HBr to propene.

Or

- (b) Explain Bredt's rule with example.

Page 5 Code No. : 10447 E

13. (a) Explain the mechanism of addition reaction of Grignard reagent with carbonyl compounds.

Or

- (b) Write note on :
(i) Wolff - Kishner reduction
(ii) Meerwein Ponderf Verley reduction.

14. (a) How is the following prepared from methyl lithium.

- (i) n - propyl alcohol
(ii) Acetic acid.

Or

- (b) How is the following prepared

- (i) Sulphonal
(ii) Mustard gas.

15. (a) Explain why cyclopentane is more stable than cyclobutane.

Or

- (b) Explain Sachse - Mohr concept of strainless ring.

Page 6 Code No. : 10447 E



PART C — (5 × 8 = 40 marks)

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

16. (a) Discuss IUPAC rules for naming branched alkanes. Illustrate with example.

Or

- (b) Write notes on the shape and stability of
(i) Carbanion (ii) Carbonium ion (iii) Free radical.

17. (a) Explain with suitable example, the effect of substrate and solvent in S_N1 reaction.

Or

- (b) Discuss the classification of alkadienes with example. Explain the stability of 1,3-butadiene.

18. (a) How α, β, γ and σ hydroxy acids are differentiated?

Or

- (b) Discuss the mechanism of addition reaction of
(i) HCN to aldehyde
(ii) NaHSO_3 to ketone.

19. (a) How does methyl-magnesium chloride reacts with

- (i) CO_2
(ii) CH_3CHO
(iii) $\text{CH}_3\text{CO}\cdot\text{CH}_3$.

Or

- (b) (i) What is a tosyl group? How is it important in organic chemistry?
(ii) Write note on reformatsky reaction.

20. (a) How is ethyl aceto acetate react with the following

- (i) urea
(ii) hydroxylamine
(iii) phenyl hydrazine.

Or

- (b) Explain conformational analysis of n-butane with energy diagram.

