

Code No. : 10320 E Sub. Code : AMCH 41

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

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 :

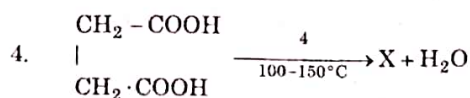
1. The formation of cyanohydrin from a ketone is an example of \_\_\_\_\_ reaction.
- (a) electrophilic addition  
(b) nucleophilic addition  
(c) nucleophilic substitution  
(d) electrophilic substitution

2. Under Wolff - Kishner reduction conditions, the conversions which may be brought about are

- (a) Cyclohexanone into cyclohexane  
(b) Benzaldehyde into benzyl alcohol  
(c) Cyclohexanone into cyclohexanol  
(d) None

3. Which one of the following is the most strong acid?

- (a) Acetic acid (b) n-butyric acid  
(c) Propionic acid (d) Formic acid



Succinic acid X is \_\_\_\_\_

- (a)  $\begin{array}{c} \text{CH}_2 - \text{CH}_3 \\ | \\ \text{CH}_2 - \text{CH}_3 \end{array}$  (b)  $\begin{array}{c} \text{CH}_2 - \text{COOH} \\ | \\ \text{CH}_2 - \text{CH}_3 \end{array}$   
(c)  $\begin{array}{c} \text{CH}_2 - \text{CO} \\ | \quad \diagup \quad \diagdown \quad \text{O} \\ \text{CH}_2 - \text{CO} \end{array}$  (d)  $\begin{array}{c} \text{COOH} \\ | \\ \text{COOH} \end{array}$

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5. Ethyl bromide reacts with sodium hydrosulphide gives \_\_\_\_\_

- (a) ethanethiol (b) diethyl sulphide  
(c) mustard gas (d) sulphonal

6. The metal used in Reformatsky reaction is \_\_\_\_\_

- (a) Mg (b) Li  
(c) Pb (d) Zn

7. Nitro - acinitro tautomerism is not exhibited by \_\_\_\_\_

- (a) primary nitro compound  
(b) tertiary nitro compound  
(c) secondary nitro compound  
(d) none of the above

8. The hydrogen atom in the methylene group is strongly acidic because of \_\_\_\_\_ groups.

- (a) electron withdrawing  
(b) electron releasing  
(c) both (a) and (b)  
(d) none of the above

9. Which of the following correctly lists the conformations of cyclohexane in order of increasing energy?

- (a) Chair < twist < boat < half - chair  
(b) Chair < boat < twist < half - chair  
(c) Half - chair < boat < twist < chair  
(d) Chair < twist < half - chair < boat

10. Which statement about cyclohexane is incorrect?

- (a) Each carbon atom is  $sp^3$  hybridized  
(b) The cyclohexane ring can flip between chair and boat conformations  
(c) Cyclohexane suffers ring strain  
(d) Hydrogen atoms occupy equatorial or axial sites

PART B — (5 × 5 = 25 marks)

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

11. (a) Discuss the mechanism of nucleophilic addition of Grignard reagent with acetaldehyde.

Or

- (b) What is Meerwein - Ponnort - Verley reduction? Explain with example.

12. (a) How is urea prepared? How does it react with  
(i)  $\text{HNO}_2$  (ii)  $\text{NH}_2\text{NH}_2$ .

Or

- (b) Discuss the effect of substituents on the acidity of carboxylic acid with suitable example.

13. (a) How is diethylsulphide prepared? How is it react with (i)  $\text{H}_2\text{O}_2$  (ii) Ni.

Or

- (b) How is methyllithium react with the following (i)  $\text{HCHO}$  (ii)  $\text{CH}_3\text{CHO}$  (iii)  $\text{CH}_3\text{COCH}_3$ .

14. (a) How are the following prepared from ethyl acetoacetate?

(i) Butanoic acid

(ii) Crotonic acid.

Or

- (b) Discuss the mechanism of nitroso - oxime tautomerism what are the evidences for the two forms?

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15. (a) Explain Sachse - Mohr theory of strainless ring.

Or

- (b) How is the civatone prepared? Write its structure.

PART C — (5 × 8 = 40 marks)

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

16. (a) (i) Explain the relative reactivities of carboxyl compounds.

(ii) Discuss the mechanism of Knoevenagal reaction.

Or

- (b) Give the preparation, properties and uses of chloral.

17. (a) Explain the reaction of action of heat on

(i) hydroxy acids

(ii) dicarboxylic acid.

Or

- (b) (i) Discuss the mechanism of esterification.

(ii) Write note on the optical property of lactic acid.

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

(i) Primary alcohol

(ii) Secondary alcohol

(iii) Tertiary alcohol

(iv) Keton.

Or

- (b) Discuss the preparation and properties of

(i) Sulphone

(ii) Sulphonal

(iii) Mustard gas.

19. (a) Explain the following tautomerisms and the evidences for them

(i) Keto - enol

(ii) Nitro - acinitro.

Or

- (b) How are the following prepared from diethyl mulonate?

(i) Succinic acid

(ii) Aceto acetic acid

(iii) Poutanoic acid.

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20. (a) Discuss the conformational analysis of mononutrituted cyclohexane.

Or

- (b) Write note on :

(i) Baeyers strain theory

(ii) Coulson - Moffit's concept.

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