(7 pages) Reg. No. : .....

Code No. : 30320 E **Sub. Code : AMCH 41**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2024.

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 aldehyde used in Knoevenagal reaction is

(a) Formaldehyde (b) Acetaldehyde

(c) Benzlaldehyde (d) Acrylic aldehyde

2. Functional groups present in aldol is _____.

(a) –OH and –COOH (b) –CO and –OH

(c) –CHO and –CO (d) –OH and CHO

3. When oxalic acid is heated with glycerol at 260°C. The product is

(a) allyl alcohol (b) formic acid

(c) acetic acid (d) maleic acid

4. Which one among the following is the strongest acid?

(a) ICH_2COOH (b) $Br-CH_2-COOH$

(c) $F-CH_2-COOH$ (d) $Cl-CH_2-COOH$

5. The element which is related to Grignard reagent is _____.

(a) Mg (b) Al

(c) K (d) Ca

6. Organo metallic compound which is used in Reformatsky reaction is

(a) Organo lithium compound

(b) Organo zinc compound

(c) Organo magnesium compound

(d) None of these

7. $HC-C=O \rightleftharpoons C=C-OH$

The above tautomerism exists in _____ type.

(a) Nitro-acinitro tautomerism

(b) Nitroso-oxime tautomerism

(c) Amido-imidol tautomers

(d) Keto-enol tautomers

8. Groups such as C = O, C ≡ N, N ≡ N, NO_2 are known as

(a) electron donating groups

(b) electron withdrawing groups

(c) both (a) and (b)

(d) none of these

9. The angle strain is cyclobutane is _____.

(a) 0.75° (b) 24.75°

(c) –5.25° (d) 9.75°

10. The most stable conformation of cyclohexane is

(a) half chair (b) twist-boat

(c) boat (d) chair

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 mechanism of aldol condensation.

Or

(b) Write notes on :

(i) MPV reduction

(ii) Wolff-Kishner reduction

12. (a) Complete the following reactions :

(i) $CH_3-CHOH-COOH+PCl_5 \rightarrow ?+?+?$

(ii) $\begin{matrix}COOH\\|\\COOH\end{matrix} \xrightarrow[Con.H_2SO_4]{\Delta} ?+?+?$

Or

(b) How is glycerol converted into citric acid?

13. (a) Write down the method of preparation and uses of the following :

(i) Sulphonal

(ii) Frankland Reagent.

Or

(b) Give any two method of preparation of thio alcohols and thio ethers.

14. (a) Classify the different types of tautomerism.

Or

(b) Explain keto-enol tautomerism by taking ethyl aceto acetate as example.

15. (a) Suggest any two methods of preparing cycloalkanes.

Or

(b) Explain briefly Baeyer's Strain theory.

PART C — (5 × 8 = 40 marks)

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

16. (a) Explain the mechanism of nucleophilic addition reaction of aldehydes and ketones with Grignard reagents and HCN.

Or

(b) Explain the mechanism of the following reactions :

(i) Knoevenagal reaction

(ii) Wittig reaction.

17. (a) Describe the structure of urea.

Or

(b) Explain the mechanism of esterification and ester hydrolysis.

18. (a) Describe the preparation and uses of :

(i) Methyl lithium

(ii) Diethyl zinc

(iii) Mustard gas.

Or

(b) Write notes on the following :

(i) Reformatsky reaction

(ii) Structure of Grignard reagent.

19. (a) How are the following compounds prepared from ethyl cyano acetate?

(i) Glutaric acid

(ii) Succionic acid

(iii) Adipic acid

Or

(b) Explain the following with example :

(i) Oxime - nitroso tautomerism.

(ii) Amido - imidol tautomerism.

20. (a) Explain the following :

(i) Sachse-Mohr theory.

(ii) Coulson and Moffil concept.

Or

(b) Explain the synthesis of the following :

(i) Civetone

(ii) Muscone.
