(6 pages) **Reg. No. :** .....

Code No. : 30475 E **Sub. Code : CMCH 21**

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

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. Which of the following is named as alkanal?
   (a) alcohol (b) ketone
   (c) carboxylic acid (d) alkanal

2. The IUPAC name of $CH_3-\underset{Cl}{\underset{|}{CH}}-\underset{OH}{\underset{|}{CH}}-CH_3$ is
   (a) 2-chloro 3-hydroxy butane
   (b) 2-chloro 3-butanol
   (c) 3-chloro 2-butanol
   (d) propylene chlorohydrin

3. Markovnikoff's addition of HBr is not applicable to
   (a) 2-butene (b) 1-butene
   (c) propene (d) 1-pentene

4. The number of π(pi) bonds in acetylene is
   (a) 1 (b) 2
   (c) 3 (d) 4

5. Which of the following rules are applicable to elimination reaction?
   (a) Hofman's rule (b) Saytseff's rule
   (c) Bredt's rule (d) All the above

6. Which of the following gives only acetaldehyde on ozonolysis?
   (a) 1-butene (b) 2-butene
   (c) 1-propene (d) 1,3-butadiene

7. Give the name of $C_6H_5-CH_3$
   (a) Napthalin (b) Toluene
   (c) Bezene (d) Phenyl

8. Mereaptans are
   (a) alcohols (b) thio alcohols
   (c) ethers (d) thioethers

9. Acetoacetic ester is prepared

(a) Reformatsky

(b) MPV reduction

(c) Opponnamer oxidation

(d) Claisen condensation

10. Least stable cycloalkane is

(a) cyclo propane (b) cyclobutane

(c) cyclopentane (d) cyclohexane

PART B — (5 × 5 = 25 marks)

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

11. (a) Write the structural formulae of the following compounds.

(i) 3-methyl puntan-2-one

(ii) 2-methyl-2-propanol

(iii) puntan-3-one

(iv) 2-hydroxyl pentanal.

Or

(b) Explain "Hyperconjugation" effect with example.

12. (a) Explain E_1 reaction in alkyl halides with example.

Or

(b) Explain S_N2 reaction and mechanism in detail.

13. (a) What is meant by MPV reduction? Give its mechanism.

Or

(b) Explain the mechanism of aldol condensation.

14. (a) How are the following prepared? Mention their uses.

(i) Sulphonal

(ii) Mustard gas.

Or

(b) What is TEL? Mention its preparation, proportion and uses.

15. (a) How is diethyl malonate prepared? Mention any two synthetic uses.

Or

(b) Explain Bayer'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) (i) Explain the stability of primary, secondary and tertiary carbonium ions.

(ii) What are carbenes? How are they formed?

Or

(b) Account the following :

(i) Inductive effect

(ii) Mexomeric effect

(iii) Nitrenes.

17. (a) Explain the mechanism of S_N1 and S_N2 reaction.

Or

(b) Explain the following types of organic reactions with suitable examples.

(i) Electrophilic addition

(ii) Electrophilic substitution

(iii) Nucleophilic addition

(iv) Nucleophilic substitution.

18. (a) Explain the mechanism of the following reactions.

(i) Wittlg reaction

(ii) Knovenaglel reaction.

Or

(b) Account for the following :

(i) Chloroacetic acid is stronger than acetic acid.

(ii) Butyric acid is a weaker acid than acetic acid.

19. (a) How are the following prepared? Mention their uses.

(i) Saccharin

(ii) Benzene sulphonyl chloride.

Or

(b) How are the following prepared? Mention their uses.

(i) Methyl lithium

(ii) Grignord reagent

(iii) Toluene sulphonic acid.

20. (a) Explain 1,3 diaxial interactions in cyclohexane derivatives with suitable examples.

Or

(b) Explain the following:

(i) Sachse – Mohr theory

(ii) Coulson – Moffit – concept.

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