(6 pages)

Reg. No. : .....

Code No. : 20066 E Sub. Code : AMCH 63

B.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2025.

Sixth Semester

Chemistry – Core

ORGANIC CHEMISTRY – IV

(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 number of hydroxyl group present in glucose molecule is

(a) 6 (b) 5

(c) 3 (d) 16

2. Glucose and mannose are

(a) Epimers (b) C_1, C_2 epimers

(c) Anomers (d) Isomers

3. The IUPAE name of piric acid is

(a) 2, 4, 6 – trinitro phenol

(b) 2, 4, 6 – trinitro – 1 – hydroxy hexane

(c) 2, 4, 6 – trinitro – 1– hydroxy benzene

(d) 1, 3, 5 – trinitro – 6 – hydroxy benzene

4. Which among the following is strongest acid?

(a) O–Nitro phenol (b) P–Chloro Phenol

(c) P–Nitro phenol (d) M–Nitro phenol

5. The reagent used for the conversion of acetamide to methylamine is

(a) PCL_5 (b) $NaOH/Br_2$

(c) Na/C_2H_5OH (d) P_2O_5

6. Which one is a sigma tropic rearrangement?

(a) Clasisen rearrangement

(b) Hoffman rearrangement

(c) Curtius rearrangement

(d) Pinacole-pinacalone rearrangement

7. Camphor is

(a) Monocyclic (b) Bicyclic

(c) Tricyclic (d) Tetracyclic

8. Molecular formula of monoterpenoid compound is

(a) C_6H_8 (b) $C_{15}H_{24}$

(c) $C_{10}H_{16}$ (d) $C_{20}H_{32}$

9. Which of the following molecules exibit IR spectra?

(a) H_2 (b) N_2

(c) Cl_2 (d) Co

10. Which of the following transitions require least energy?

(a) $n \rightarrow \sigma^*$ (b) $\pi \rightarrow \pi^*$

(c) $\sigma \rightarrow \sigma^*$ (d) $n \rightarrow \pi^*$

PART B — ($5 \times 5 = 25$ marks)

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

11. (a) Write a note on Wohl's degradation of an aldohexose to aldopentose.

Or

(b) How is fructose converted into glucose?

12. (a) Explain the mechanism of benzoin condensation.

Or

(b) How is benzene 1, 2 dicarboxylic acid prepared? Mention its uses.

13. (a) Discuss the mechanism of benzilic acid rearrangement?

Or

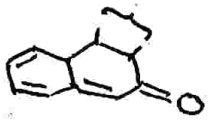
(b) Define hydroperoxide rearrangement and explain its mechanism.

14. (a) Discuss Hofmann exhaustive methylation with suitable example.

Or

(b) Outline the synthesis of Citral.

15. (a) One the basis wood-ward fieser rule calculate the λ_{max} value for the following.

(i) 

(ii) $CH_2 = CH - CH = CH - CH = CH_2$

Or

(b) Write notes

(i) Chemical Shift

(ii) Spin-spin coupling

PART C — (5 × 8 = 40 marks)

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

16. (a) Discuss the constitution of glucose.

Or

(b) Complete the following reactions.

(i) glucose $+ 5AC_2O \rightarrow ? + ?$

(ii) glucose $\xrightarrow[[H]]{HI/P}$?

(iii) Fructose + $NH_2OH \rightarrow ?$

(iv) Fructose + $HCN \rightarrow ?$

17. (a) Outline the preparation of (3+3+2=8)

(i) Resorcinol

(ii) Antranilic acid

(iii) Cinnamaldehyde

Or

(b) (i) Give the mechanism of perkin's reaction. (4+4=8)

(ii) Explain Houben - Hoesch synthesis

18. (a) Give the mechanism of the following

(i) Pinacol - Pinacolone rearrangement (4+4=8)

(ii) Fries rearrangement

Or

(b) Explain the mechanism to the following.

(i) Beekmann rearrangement

(ii) Schmidt rearrangement

19. (a) How will you elucidate the structure of nicotine?

Or

(b) Discuss the structure of piperine.

20. (a) How many types of NMR signals are to be expected on the spectrum of the following compounds.

(i) iso-butane

(ii) Propionic acid

(iii) 1–chloro propane

(iv) Benzel alcohol

Or

(b) Write a detailed note on the application of UV spectrum.

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