(6 pages)

**Reg. No. : .....**

**Code No. : 10325 E** **Sub. Code : AMCH 63**

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

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. Invert sugar is _____.

   (a) glucose (b) fructose

   (c) glucose + fructose (d) maltose

2. Carbohydrates are characterized by the presence of _____.

   (a) hydroxyl group (b) carbonyl group

   (c) asymmetric carbon (d) all the above

3. p-diydroxybenzene is called as _____.

   (a) quinine (b) quinone

   (c) quinol (d) hydroquinone

4. Identify the unsaturated aldehyde from the following

   (a) benzaldehyde (b) formaldehyde

   (c) cinnamaldehyde (d) acetalhyde

5. _____ rearrangement involves migration of a group or atom to electron deficient nitrogen atom.

   (a) Hofmann

   (b) Benzil–benzilic acid

   (c) Fries

   (d) Wolff

6. The conversion of ketoximes to N-substituted amide is _____ rearrangement.

   (a) Beckmann (b) Benzil-benzilic acid

   (c) Fries (d) Wolff

7. Which of the following is a piperidine class alkaloid?

   (a) nicotine (b) conine

   (c) quinine (d) morphine

8. Pick out a sesquiterpene from the following

(a) limonene (b) rubber

(c) zingiberene (d) squalene

9. Which of the following is an auxochrome?

(a) C=C (b) $=CH_2$

(c) $-NH_2$ (d) $-N=N-$

10. Acetone has _____ type of protons.

(a) one (b) two

(c) three (d) six

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What are polysaccharides? Draw the structure of starch.

Or

(b) Explain the osazone formation by glucose and fructose.

12. (a) Comment on the mechanism of Kolbe's reaction.

Or

(b) Write the preparation and uses of cinnamaldehyde.



13. (a) Summarize the salient features of rearrangement involving migration of a group from oxygen to ring carbon atom.

Or

(b) Discuss the mechanism of Wolff rearrangement.

14. (a) State and explain isoprene rule.

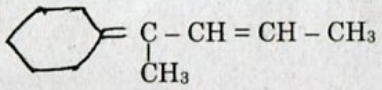
Or

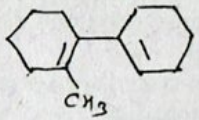
(b) Write the synthesis of nicotine.

15. (a) Discuss the NMR spectra of isobutene.

Or

(b) Calculate the $\lambda_{max}$ for the following compounds

(i) 


(ii) 


$CH_3$

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 following conversions

(i) Glucose to fructose

(ii) Fructose to glucose.

Or

(b) Summarise the chain lengthening and shortening of aldoses.

17. (a) Predict the mechanism for the following reactions.

(i) Perkin reaction

(ii) Claisen reaction.

Or

(b) (i) Discuss the acidic character of phenol.

(ii) What is ortho effect? Explain with example.

18. (a) Give the mechanism for the following rearrangement

(i) Bayer-Villiger oxidation

(ii) Benzil-benzilic acid rearrangement.

Or

(b) Compare the mechanism of Beckmann, Hofmann and Curtius rearrangement.



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

Or

(b) Write the general methods for the determination of structure of alkaloids.

20. (a) Explain the applications of UV spectroscopy in the structural analysis of organic compounds.

Or

(b) (i) How will you differentiate inter and intra molecular hydrogen bonding with the help IR spectroscopy.

(ii) Draw and explain the NMR spectra of anisole.

———————