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

Code No. : 10010 E   Sub. Code : SMCH 62

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

Sixth Semester

Chemistry – Core

ORGANIC CHEMISTRY – IV

(For those who joined in July 2017-2019)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Which is a reducing sugar?

    (a) Glucose   (b) Starch

    (c) Sucrose   (d) None of these

2. Starch is a homopolymer of

    (a) α–D-Glucose   (b) β–D-Glucose

    (c) α–D-Fructose   (d) β–D-Fructose

3. Which is the strongest acid?

    (a) m-hydroxy benzoic acid

    (b) p- hydroxy benzoic acid

    (c) o- hydroxy benzoic acid

    (d) None of these

4. O-amino benzoic acid is

    (a) Anthramilic acid

    (b) Mandelic acid

    (c) Cinnamic acid

    (d) None of these

5. The chemical used to carryout fries rearrangement is

    (a) BCl_3 (b) NH_3

    (c) Anhyd. $AlCl_3$ (d) BF_3

6. 1, 2– diols of higher order are called _____.

    (a) Pinacols   (b) Pyrogallols

    (c) Thiols   (d) None of these

7. Methods used to find the nature of ring in alkaloids

    (a) Hydrolysis

    (b) Oxidation

    (c) Hofmann's exhaustive methylation

    (d) All these

8. Terpenes are made up of

    (a) Chloroprene   (b) Neoprene

    (c) Isoprene   (d) None of these

9. The δ value of TMS is

    (a) 10

    (b) 5

    (c) 0

    (d) None of these

10. Which electronic excitation requires less energy?

    (a) $\sigma - \sigma^*$ (b) $n - \sigma^*$

    (c) $\pi - \pi^*$ (d) $n - \pi^*$

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Write notes on the classification of carbohydrates.

    Or

    (b) What is muta rotation? Explain with example.

12. (a) Explain Kolb's reaction with example.

    Or

    (b) Write notes on benzoin condensation.

13. (a) Explain benzidine rearrangement.

    Or

    (b) Explain Baryer-Villiger oxidation.

14. (a) Elucidate the structure of coniine.

    Or

    (b) Elucidate the structure of menthol.

15. (a) Explain Woodward-Fieser rule for calculating λ_{max} for dienes.

    Or

    (b) What is chemical shift? Explain.

PART C — (5 × 8 = 40 marks)

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

16. (a) (i) Convert fructose into glucose.
    (ii) Explain the structure of starch.

    Or

    (b) (i) Give any four chemical reactions of fructose.
    (ii) Give the Haworth structure of cellulose and two uses.

17. (a) (i) Explain Reimer-Tiemann reaction.
    (ii) Explain Perhin's reaction.

    Or

    (b) Explain the following :
    (i) Quinone oxime tautomerism
    (ii) Ortho effect.

18. (a) Explain the following rearrangement with example (i) Bechmann (ii) Claisen.

    Or

    (b) Explain the following rearrangement with example (i) Pinacol- Pinacolone. (ii) Hofmann.

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19. (a) Elucidate the structure of nicotine.

    Or

    (b) Elucidate the structure of camphor.

20. (a) (i) Explain spin-spin splitting.
    (ii) Sketch the NMR spectrum of 1-chloropropane and explain.

    Or

    (b) (i) Explain the electronic excitations in UV spectroscopy.
    (ii) How is I.R. spectroscopy used to distinguish the types of hydrogen bond?

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