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Reg. No. : .....

Code No. : 30286 E **Sub. Code : JMCH 62/ SMCH 62**

B.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2020.

Sixth Semester

Chemistry – Main

ORGANIC CHEMISTRY – IV

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. How many aldohexoses are possible for the molecular formula $C_6H_{12}O_6$?

(a) 2 (b) 4

(c) 8 (d) 16

2. Which one of the following is not a polysaccharide?

(a) Cellulose (b) Sucrose

(c) Amylose (d) Insulin

3. Perkin reaction is related to ————.

(a) Aldol condensation

(b) Cannizzaro reaction

(c) Wittig reaction

(d) Mannich reaction

4. $CH_3CHo + CH_3CHo \xrightarrow{NaOH}$? Predict the product.

(a) $CH_3CH_2 - \overset{\overset{O}{\|}}{C} - CH_3$

(b) $CH_3 - \overset{\overset{O}{\|}}{C} - \overset{\overset{O}{\|}}{C} - CH_2CH_3$

(c) $CH_3 \underset{\underset{CHO}{|}}{CH} - CH_3$

(d) $CH_3 \underset{\underset{OH}{\|}}{CH} - CH_2 - CHO$

5. Which of the following will undergo benzil-benzilic acid rearrangement?

(a) butane-2,3-diol (b) 1,2-diketones

(c) Phenolic esters (d) Amines

6. Hoffman rearrangement takes place in the presence of ————————.

(a) $Br_2 + KOH$ (b) $Cl_2 + KOH$

(c) $Br_2 + NaOH$ (d) $Cl_2 + NaOH$

7. The fundamental unit in terpenoids is ————————.

(a) 1,3-butadiene

(b) 2-methyl-1,3-butadiene

(c) Allene

(d) Phenols

8. Which of the following is not a alkaloid?

(a) nicotine (b) morphine

(c) citral (d) conine

9. Which of the following is a chromophore?

(a) $\rangle C = 0$ (b) $\rangle C = S$

(c) $-N = 0$ (d) all the above

10. In NMR the δ (deta) and τ (tau) scales are related by the expression ————————.

(a) $\tau = 10 - \delta$ (b) $\tau = 10 + \delta$

(c) $\delta = 2\tau$ (d) $\tau + 10 = \delta$

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 conversion of fructose to glucose.

Or

(b) Explain the chain shortening of aldoses.

12. (a) What is ortho effect? Explain.

Or

(b) Give the mechanism of Knovenagel reaction.

13. (a) Write the mechanism of benzil – benzilic acid rearrangement.

Or

(b) Write a note on : Curtius rearrangement.

14. (a) What is isoprene rule? Explain.

Or

(b) What are alkaloids? Give their classification.

15. (a) Give the application of UV spectra.

Or

(b) Discuss the NMR spectrum of anisole.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) What are polysaccharides? Explain the structure of starch and cellulose.

Or

(b) (i) Write down the reaction of Osazone formation. (5)

(ii) Write note on : Mutaroation. (3)

17. (a) Give the preparation and uses of Vanillin.

Or

(b) (i) Write the preparation of Cresol. (3)

(ii) Explain Houben–Hoesch synthesis. (5)

18. (a) Write note on :

(i) Bayer–Villiger oxidation (4)

(ii) Dakin reaction. (4)

Or

(b) Discuss any two rearrangements from oxygen to ring carbon atom.

19. (a) Write the synthesis of nicotine.

Or

(b) Give the structural elucidation of camphor.

20. (a) Define the following :

(i) Red shift

(ii) Blue shift

(iii) Hypochromic shift

(iv) Hypsochromic shift

Or

(b) Describe the applications of IR spectroscopy.

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