

(6 pages)

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 — ($10 \times 1 = 10$ 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

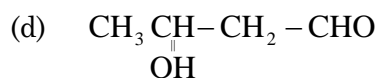
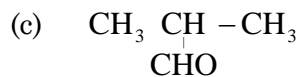
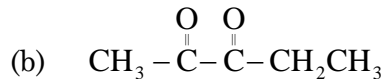
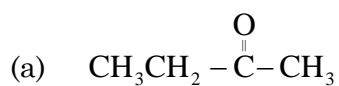
2. Which one of the following is not a polysaccharide?

- (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. $\text{CH}_3\text{CHO} + \text{CH}_3\text{CHO} \xrightarrow{\text{NaOH}} ?$ Predict the product.



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) $\text{Br}_2 + \text{KOH}$ (b) $\text{Cl}_2 + \text{KOH}$
(c) $\text{Br}_2 + \text{NaOH}$ (d) $\text{Cl}_2 + \text{NaOH}$
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) >C=O (b) >C=S
(c) -N=O (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 — ($5 \times 5 = 25$ 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 Knoevenagel 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 : Mutarotation. (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.
