

Reg. No. :

Code No. : 20010 E Sub. Code : SMCH 62

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2022

Sixth Semester

Chemistry — Main

ORGANIC CHEMISTRY — IV

(For those who joined in July 2017 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. Which is a keto hexose?
(a) Glucose (b) Fructose
(c) Sucrose (d) Cellulose
2. Which is an example of Kiliani synthesis?
(a) Glucose → Arabinose
(b) Arabinose → Glucose
(c) Glucose → Fructose
(d) Fructose → Glucose

9. Which gives only one NMR signal?
(a) $\text{CH}_3\text{CH}_2\text{OH}$ (b) CH_3COCH_3
(c) $\text{CH}_3\text{-CH}_2\text{-CH}_3$ (d) $\text{CH}_3\text{CH}_2\text{Cl}$
10. TMS is
(a) Trimethyl silane
(b) Tetra methyl silane
(c) Trimethylene silane
(d) Tetra methyl sulphur

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Describe the structure of starch.
Or
(b) Classify carbohydrates.
12. (a) Explain the acidic character of phenol and the effect of substituents.
Or
(b) Explain p-benzoquinone mono oxime-p-nitroso phenol tautomerism.

Page 3 Code No. : 20010 E

3. Terephthalic acid is
(a) Ortho isomer (b) Para isomer
(c) Meta isomer (d) None of these
4. Phenol is
(a) acidic (b) basic
(c) neutral (d) none of these
5. In which rearrangement benzamide gives aniline?
(a) Bechmann (b) Curtius
(c) Hofmann (d) Claisen
6. Baeyer-Villiger oxidation is carried out using
_____.
(a) Mineral acids (b) Picric acid
(c) Peracids (d) None of these
7. The alkaloid in black pepper is
(a) Reserpine (b) Nicotine
(c) Coniine (d) Piperine
8. Which is an acyclic terpenoid?
(a) Menthol (b) Limonene
(c) α -Terpineol (d) Citral

Page 2 Code No. : 20010 E

13. (a) Explain benzil-benzilic acid rearrangement with example.
Or
(b) Explain Pinacol-pinacolone rearrangement with example.
14. (a) Elucidate the structure of Coniine.
Or
(b) Elucidate the structure of Citral.
15. (a) Write short notes on chemical shift.
Or
(b) How is IR spectroscopy used to distinguish the types of hydrogen bond?

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) (i) How will you convert glucose into fructose?
(ii) How will you convert arabinose into glucose?

Or

Page 4 Code No. : 20010 E

- (b) (i) Give any four chemical reactions of glucose.
 (ii) Explain the hydrolysis reaction of sucrose.
17. (a) (i) Explain Perbin's reaction.
 (ii) Explain Benzoin condensation.

Or

- (b) Write short notes on
 (i) Coumarin
 (ii) Vanillin
 (iii) Michler's ketone.
18. (a) Explain the following rearrangements :
 (i) Bechmann
 (ii) Benzidine

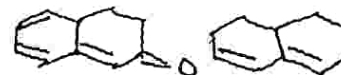
Or

- (b) Explain the following rearrangements :
 (i) Claisen
 (ii) Hofmann.

19. (a) (i) Give the synthesis of nicotine.
 (ii) Elucidate the structure of dipentene.

Or

- (b) Elucidate the structure of piperine.
20. (a) (i) Calculate the λ_{\max} for the following compounds :



- (ii) What are the reasons for using TMS in NMR spectroscopy?

Or

- (b) (i) Explain spin-spin splitting.
 (ii) Sketch and explain NMR spectrum of ethyl methyl ketone.