

(6 pages)

Reg. No. :

Code No. : 20061 E Sub. Code : CMCH 51

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2025.

Fifth Semester

Chemistry — Core

ORGANIC CHEMISTRY — II

(For those who joined in July 2021 and 2022 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. A pair of stereoisomers which are not mirror images of each other are called
- (a) enantiomers (b) diastereomers
(c) metamers (d) racemates

2. How many chiral carbon atoms are present in lactic acid?
- (a) 1 (b) 2
(c) 3 (d) 4
3. The most stable conformation of 1,2-dibromoethane is _____ form.
- (a) anti (b) eclipsed
(c) gauche (d) fully eclipsed
4. The dipole moment value of trans isomer is _____
- (a) always maximum
(b) equal to zero
(c) not equal to zero
(d) always minimum
5. Starch is an example of _____
- (a) monosaccharide
(b) disaccharide
(c) polysaccharide
(d) simple sugar

6. Sucrose on hydrolysis gives _____
(a) glucose + starch
(b) glucose
(c) fructose
(d) glucose + fructose
7. Identify a non-benzenoid compound from the following.
(a) benzene (b) azulene
(c) phenol (d) naphthalene
8. The electrophile involved in the nitration of benzene is _____
(a) NO_2^+ (b) NO_2^-
(c) NO_3^- (d) NO
9. The IUPAC name of pyrrole is _____
(a) azole (b) oxole
(c) thiole (d) oxane
10. Pick out the name of a condensed heterocyclic compound from the following.
(a) furan (b) pyridine
(c) quinoline (d) thiophene

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PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Write Fischer plane projection formula for optical isomers of lactic acid and tartaric acid.
Or
(b) Discuss the optical activity of biphenyls.
12. (a) Predict cis and trans forms from the following.
Or
(b) Discuss keto-enol tautomerism with an example.
13. (a) Discuss the classification of monosaccharides.
Or
(b) How will you convert glucose to fructose.
14. (a) Explain Huckel rule of aromaticity with examples.
Or
(b) What is benzyne mechanism? Explain.

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[P.T.O.]

15. (a) Explain the mechanism of electrophilic substitution reaction of quinoline.

Or

- (b) Enumerate Fischer indole synthesis for the preparation of heterocyclic compounds.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Explain the following terms :
- (i) Enantiomers
 - (ii) Diastereomers
 - (iii) Chiral carbon.
- Or
- (b) Explain the following :
- (i) Racemisation
 - (ii) Partial asymmetric synthesis
17. (a) Give a detailed study of conformations of ethane.
- Or
- (b) Discuss the relative stability of conformers of 1,2-glycol.

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18. (a) Write any three reactions of glucose and fructose.

Or

- (b) Explain the following :
- (i) Zwitter ion
 - (ii) Isoelectric point
 - (iii) Cyclic structure of glucose

19. (a) Discuss the directing influence of substituents on the benzene ring.

Or

- (b) Analyze the mechanism of nitration and sulphonation of benzene.

20. (a) Write the preparation and reactions of isoquinoline.

Or

- (b) Compare the basicity of pyridine, piperidine and pyrrole.
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