

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

Fifth Semester

Chemistry — Core

ORGANIC CHEMISTRY — II

(For those who joined in July 2021–2022)

Time : Three hours Maximum : 75 marks

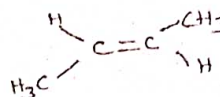
PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer

- How many optical isomers are possible in a compound with one Chiral Carbon?
  - 5
  - 4
  - 2
  - 3
- Glucose and mannose are
  - Epimers
  - Enantiomers
  - Diastereo isomers
  - None of these

- Assign E or Z configuration to the given compound.



- Z configuration
  - S configuration
  - E-configuration
  - R configuration
- The energy required to rotate n-butane molecule about the carbon-carbon bond is called \_\_\_\_\_
    - Rotational energy
    - Torsional energy
    - Enantiomeric energy
    - Potential energy
  - The naturally occurring protein consist of
    - L-amino acids
    - D-amino acids
    - both (a) and (b)
    - None of these
  - The product of Friedal – crafts Acylation reactions are
    - Alkyl benzene
    - Aryl benzene
    - Alkyl amine
    - Halo benzene
  - Starch is converted into maltose by the enzyme
    - Zymase
    - Ribose
    - Invertase
    - Diastase

- Which of the following is a characteristic of an aromatic compound?
  - Cyclic
  - Planar
  - (4n+2)  $\pi$  electron
  - All the above
- What is the product when pyrrole reacts with Br<sub>2</sub> in ethanol?
  - 2,3 dibromo pyrrole
  - 2,5 dibromo pyrrole
  - 2,3,4,5 tetrabromo pyrrole
  - 3,4 dibromo pyrrole
- Furan has as its hetero atom
  - O
  - N
  - Se
  - S

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

- Difference between enantiomer and disastereo isomer.

Or

  - Explain Stereo selective reaction with suitable examples.

- Explain the Amino-imino tautomerism with suitable examples.

Or

  - What are the factors affecting the stability of conformations.
- Write notes on Isoelectric point and explain the Action of heat on  $\alpha, \beta, \gamma$  - amino acids.

Or

  - Write a detailed note on mutarotation.
- Explain the mechanism of halogenation.

Or

  - Explain the mechanisms of Nitration of Toluene.
- Write any three electrophilic substitution reactions given by Furan.

Or

  - Write the Fischer indole synthesis.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

- Describe the resolution of racemic mixture.

Or

  - Discuss the optical activity of Biphenyls and allenes.

17. (a) Discuss the conformation analysis of cyclopentane.

Or

(b) Describe the conformation analysis of ethane and 1,2 dichloroethane.

18. (a) Explain the following conversions

(i) Glucose  $\rightarrow$  Fructose

(ii) Fructose  $\rightarrow$  Glucose

Or

(b) Discuss the properties, uses and structure of cellulose.

19. (a) Discuss the Benzene Mechanism.

Or

(b) Explain the mechanism of the following electrophilic substitution.

(i) Chlorination

(ii) Sulphonation

20. (a) Compare the aromatic characters of furan, pyrrole and thiophene.

Or

(b) Describe the electrophilic and nucleophilic substitution reactions in pyridine.