

This question paper contains 5 printed pages]

NY—86—2023

FACULTY OF SCIENCE

M.Sc. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New/CBCS Pattern)

CHEMISTRY

Paper-I (CH-412)

(Organic Chemistry)

(Thursday, 7-12-2023)

Time : 10.00 a.m. to 1.00 p.m.

Time—3 Hours

Maximum Marks—75

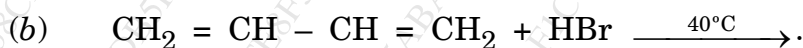
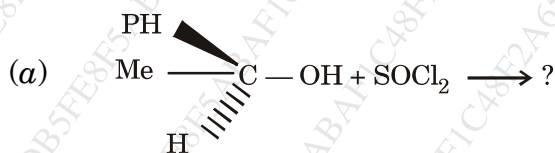
N.B. :— (i) Attempt all questions.

(ii) Figures to the right indicate full marks.

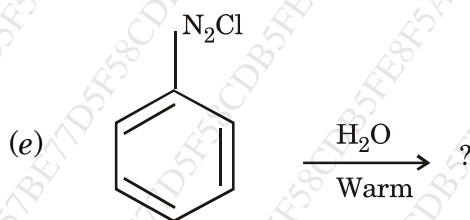
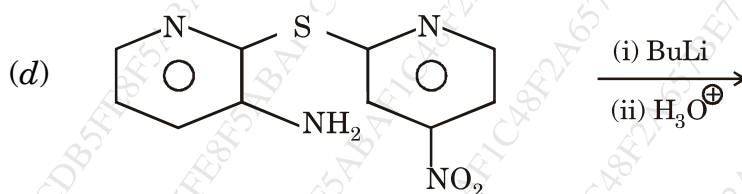
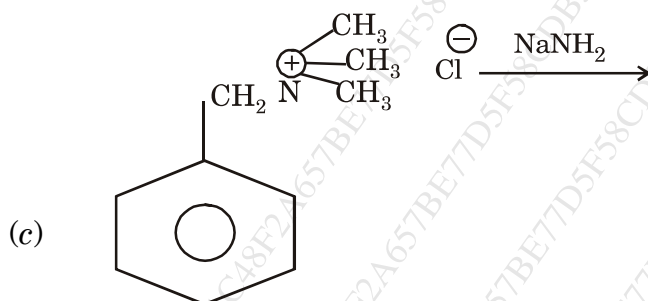
1. Give the reason any *three* of the following : 15

- (a) Cyclopentadiene anion is more stable than cyclopentadiene cation.
- (b) [6] Annulene is aromatic in nature.
- (c) Ethyl carbanion is more stable than tertiary butyl carbanion.
- (d) σ_x value of 3-methoxy benzoic acid is + 0.11 whereas 4-methoxy benzoic acid is -0.28.
- (e) Meso compound is optically inactive.

2. Predict the product with appropriate mechanism (any *three*) : 15

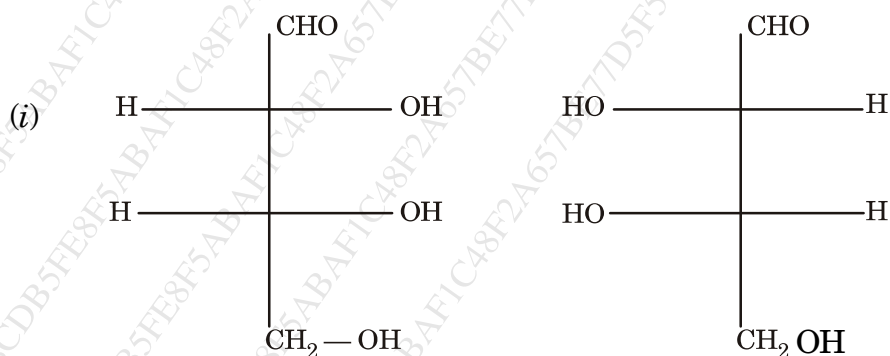


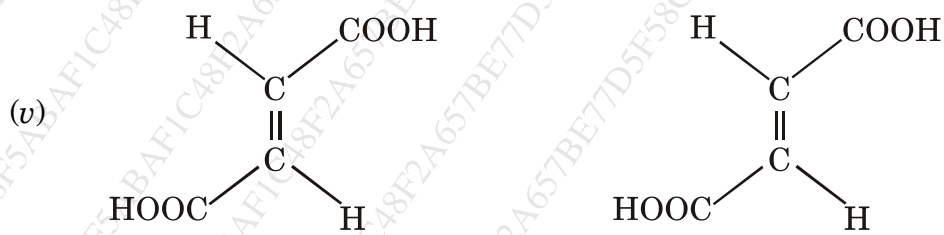
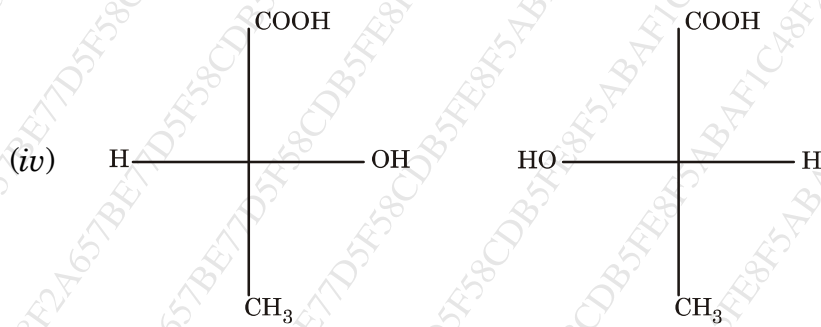
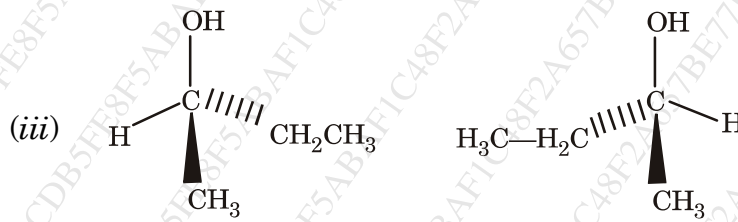
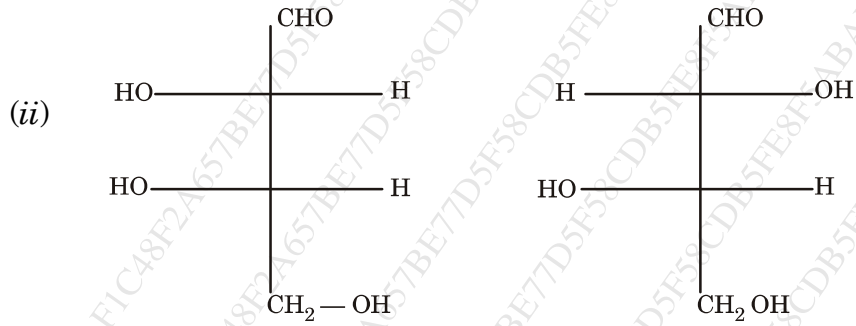
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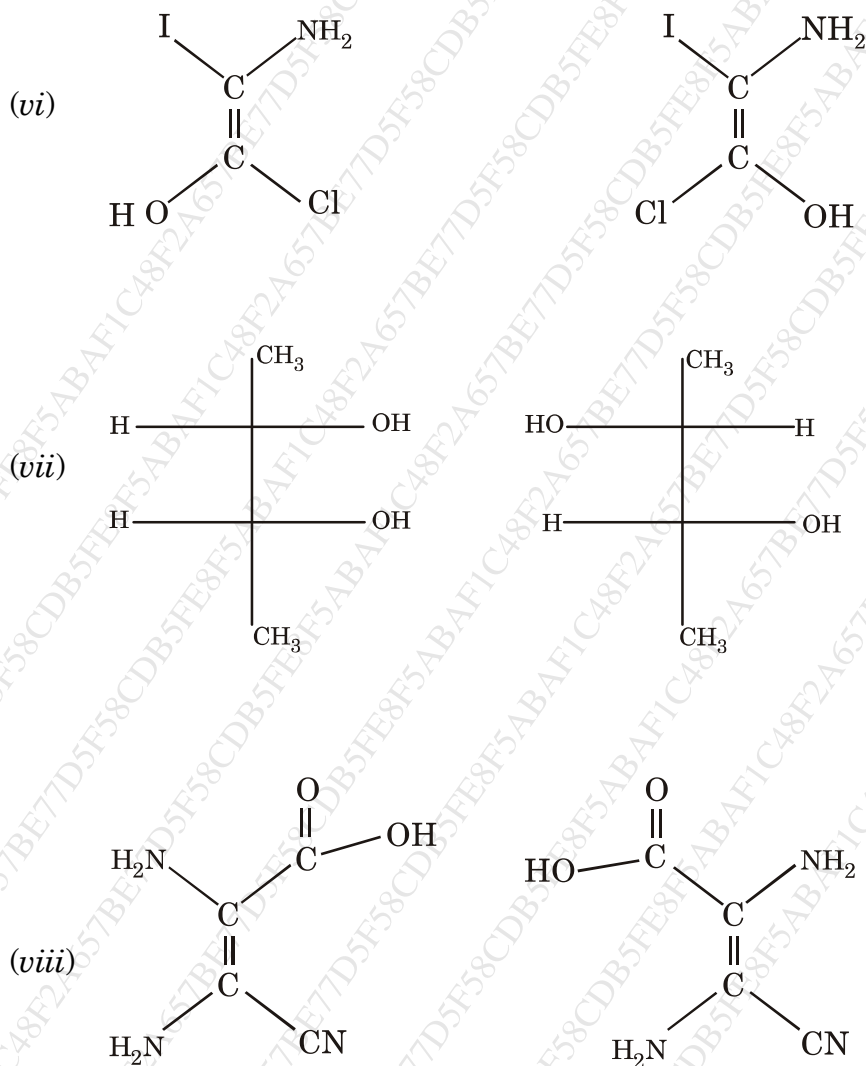


3. (a) Indicate whether the relationship in each pair of compounds given below is identical, enantiomeric or distereomeric by assigning R & S and E & Z configuration (any four) :

8







(b) Comment on the following :

7

- (i) Alternate and non-alternate hydrocarbon.
- (ii) Antiaromaticity and Homoaromaticity.

Or

What are carbenes ? How are they generated ? Give the structure of singlet and triplet methylene carbene.

4. (a) Discuss the methods of resolution and racemic modification. 8

Or

Explain the neighbouring group participation by σ and π bonds with suitable example.

- (b) What is conformational analysis ? Explain the order of stability of 1, 4-dimethyl cyclohexane. 7

Or

Discuss the factors affecting on reactivity in Aromatic Nucleophilic substitution reaction.

5. Write short notes on any *three* of the following : 15

- (i) Tautomerism in carbonyl compound
- (ii) Conformation of glucose
- (iii) Hammonds postulates
- (iv) SET mechanism
- (v) Benzyne reaction.