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LB—82—2023

FACULTY OF SCIENCE

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

APRIL/MAY, 2023

(New/CBCS Pattern)

CHEMISTRY

Paper—CH-412

(Organic Chemistry-I)

(Saturday, 6-5-2023)

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

Time— Three Hours

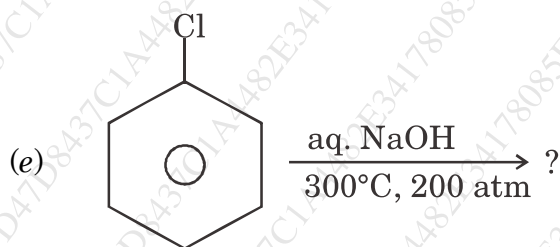
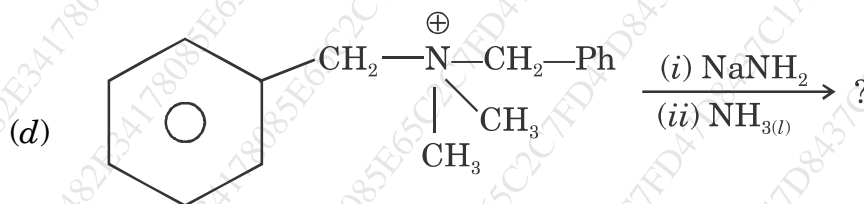
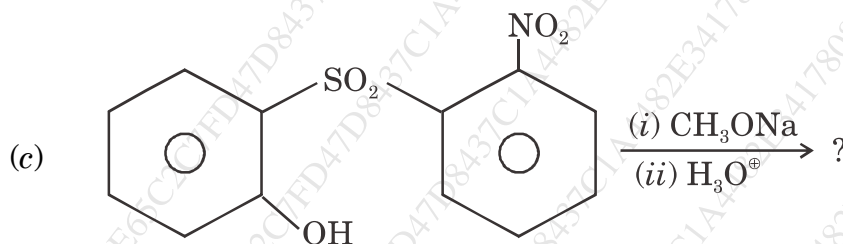
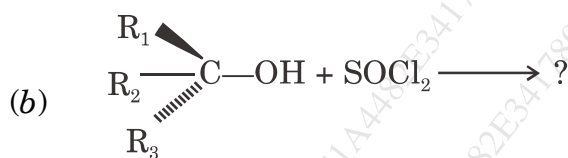
Maximum Marks—75

N.B. :— (i) Attempt All questions.

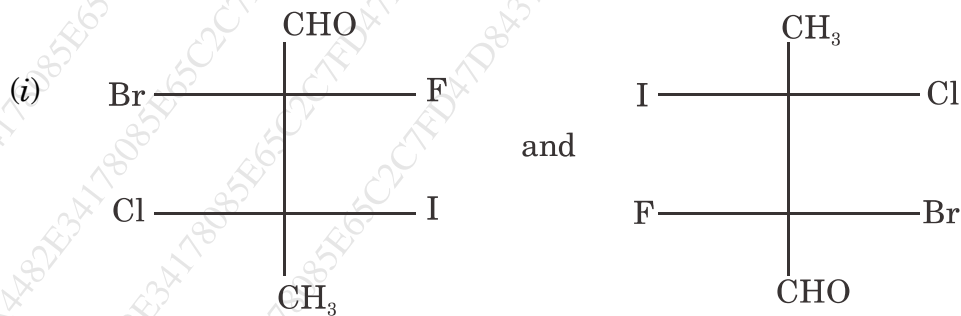
(ii) Figures to the right indicate full marks.

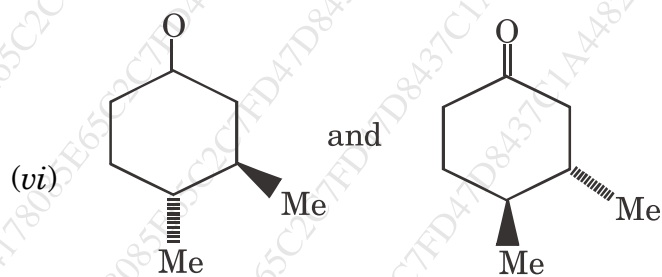
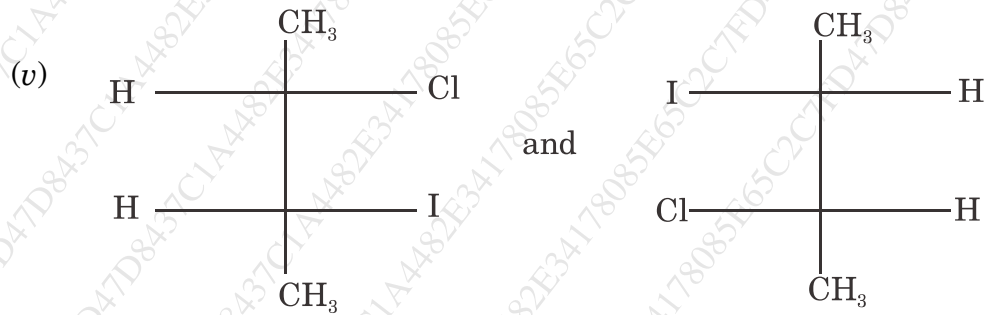
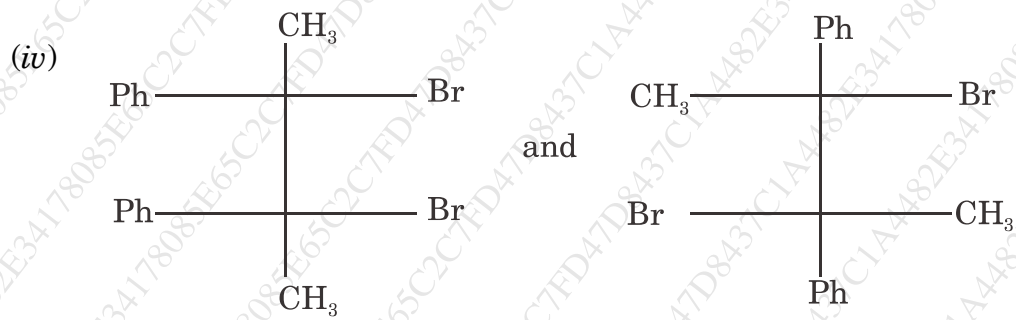
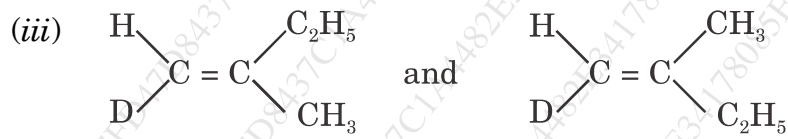
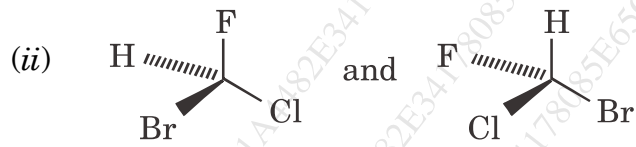
1. Give the reason any *three* of the following : 15
- (a) Cyclopentadiene is acidic in nature.
 - (b) [14] Annulene is aromatic in nature.
 - (c) Tertiary butyl free radical is more stable than ethyl free radical.
 - (d) σ_x -value of 4-nitrobenzoic acid is + 0.78 where as 4-methoxy benzoic acid is - 0.28.
 - (e) Racemic mixture is optically inactive.
2. Predict the product with appropriate mechanism (any *three*) : 15
- (a) $\text{CH}_3\text{-Br} + \text{OH}^\ominus \longrightarrow ?$

P.T.O.

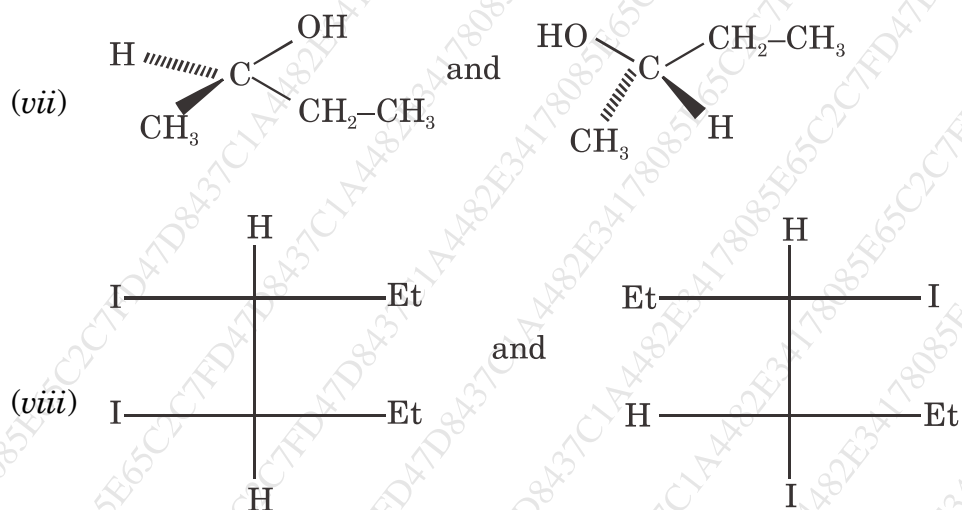


3. (a) Indicate whether the relationship in each pair of compounds below is identical enantiomeric or diastereomeric by assigning R and S configuration and E and Z configuration. (any four) : 8





P.T.O.



(b) Comment on the following : 7

- (i) Isotopic labelling effect.
- (ii) Alternate and non-alternate hydrocarbon.

Or

What are carbanion ? How are they generated ? Discuss their stability.

4. (a) What is conformational analysis and explain the order of stability of 1, 3-dimethyl cyclohexane. 8

Or

(a) Discuss the following :

- (i) Ambident nucleophile
- (ii) Phase transfer catalyst.

(b) Explain with suitable examples the term homotopic, enantiotopic and diastereotopic groups and faces. 7

Or

Discuss the $ArSN^2$ reaction with a suitable mechanism.

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

- (i) Hyperconjugation
- (ii) Neighbouring group participation
- (iii) Stereospecific and Stereoselective Reaction
- (iv) Asymmetric synthesis
- (v) Pyrolytic elimination.