

This question paper contains **5** printed pages]

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S. No. of Question Paper : **6476**

Unique Paper Code : **2174001002**

Name of the Paper : **GE : Basic Concepts of Organic Chemistry**

Name of the Course : **B.Sc. (Hons.)**

Semester : **II/IV/VI/VIII**

Duration : **2 Hours**

Maximum Marks : **60**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *four* questions in all.

Question No. **1** is compulsory.

All parts of a question should be attempted together.

All questions carry equal marks.

1. Giving reasons arrange the following :

(a) In order of increasing acidity :

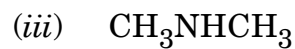
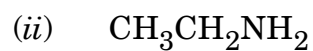
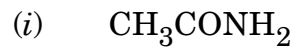
(i) BrCH_2COOH

(ii) CH_3COOH

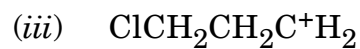
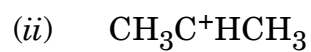
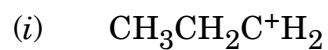
(iii) ClCH_2COOH

P.T.O.

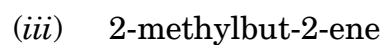
(b) In order of increasing basicity :



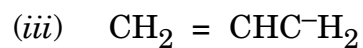
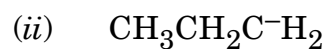
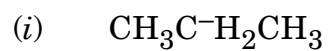
(c) In order of increasing stability :



(d) In order of increasing stability :



(e) In order of increasing stability :



2. (a) Giving suitable examples differentiate between :

(i) Inductive and Electrometric effect

(ii) Homolysis and Heterolysis.

(b) Which of the following species behave as a nucleophile, an electrophile, both or neither :

(i) I^-

(ii) H_2O

(iii) H_3N

(iv) Cr^{3+}

(v) BeCl_2

(vi) CH_4

(vii) $\text{CH}_3\text{C} \equiv \text{N}$

(viii) H_2

(ix) SnCl_4

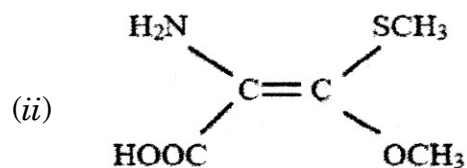
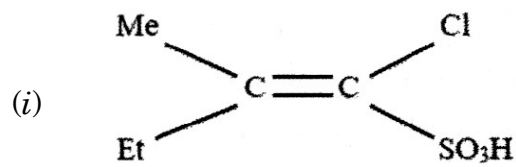
(x) $\text{H}_2\text{C} = \text{O}$

(c) Give the major product formed when $\text{Ph}-\text{CH} = \text{CH}-\text{CH}_3$ reacts with HBr in absence of peroxides. Explain the mechanism of the reaction.

5×3

P.T.O.

3. (a) Compare the SN^1 and SN^2 mechanisms for nucleophilic substitution reaction of alkyl halides.
- (b) Account for the aromaticity observed in :
- (i) 1, 3-cyclopentadienyl anion but not 1, 3-cyclopentadiene.
- (ii) The heterocycles pyrrole and pyridine.
- (c) Assigning priorities, determine the configuration E/Z for the following compounds :



5×3

4. (a) Give the R/S configuration to both the Chiral Centers of Meso-2, 3-Dibromobutane.
- (b) Write the contributing resonance structures and delocalized hybrids for :
- (i) Carbon dioxide CO_2
- (ii) Isocyanic acid NHCO .

- (c) How can Propan-1-ol be prepared using Hydroboration-oxidation reaction ? Explain giving mechanism. 5×3
5. (a) Differentiate between :
- (i) D/L and d/l
 - (ii) Racemic Mixture and Meso Compound.
- (b) (i) Calculate the percentage of isomers expected from monochlorination of Propane. The relative reactivities of 2° and 1° H atoms are 3.8 and 1.0 respectively.
- (ii) Write the product/s formed when cis-but-2-ene reacts with Bromine (Br₂).
- (c) Halogens are deactivating yet ortho, para-directing in electrophilic aromatic substitution reactions. Explain. 5×3
6. Write short notes on any *three* of the following :
- (a) Hoffmann and Saytzeff mode of elimination
 - (b) Free Radicals
 - (c) Biological dehydration reactions
 - (d) Ozonolysis
 - (e) Friedel-Crafts alkylation reaction. 5×3