

This question paper contains 4 printed pages]

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S. No. of Question Paper : 3517

Unique Paper Code : 2174001002

Name of the Paper : GE Basic Concepts of Organic Chemistry

Name of the Course : B.Sc. (H)/B.Sc. Prog.

Semester : I/III/V

Duration : 2 Hours

Maximum Marks : 60

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

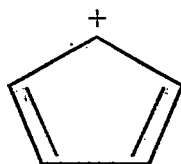
Answer four questions in all.

Each question carries 15 marks.

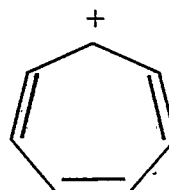
1. (a) (i) Which one is more basic pyridine or pyrrole? Explain.
- (ii) Arrange the following in increasing order of acidity with explanation :
Bromoacetic acid, chloroacetic acid and iodoacetic acid.
- (b) (i) Aniline does not undergo Friedel-Crafts reaction. Explain.
- (ii) Which of the following is aromatic, non-aromatic or anti-aromatic?



i



ii



iii

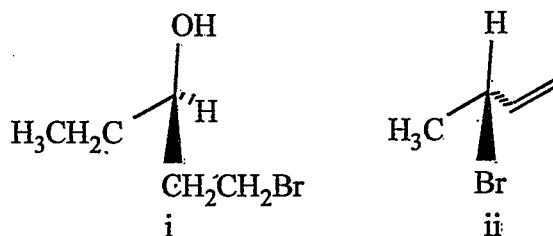
- (c) (i) Arrange the following carbocations in descending order of their stability :
 $(\text{CH}_3)_2\text{CH}^+$, CH_3CH_2^+ , CH_3^+ , $(\text{CH}_3)_3\text{C}^+$.

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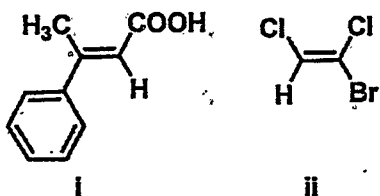
- (ii) What do you mean by dipole moment ? Explain its use to identify geometrical isomers.

5,5,5

2. (a) (i) Explain the basicity order of methyl amine, Dimethyl amine, Trimethyl amine in solution.
- (ii) What do you mean by homolytic and heterolytic fissions ? Explain with suitable examples.
- (b) (i) What are mesomers ? Give *one* example.
- (ii) Give R/S descriptor to the following compounds :

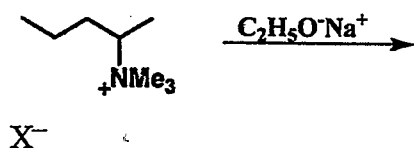


- (c) (i) Distinguish enantiomers and diastereomers.
- (ii) Give E/Z descriptor to the following compounds :



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3. (a) Explain SN^2 reaction with mechanism and stereochemistry involved.
- (b) (i) Write the name and products of the following reaction :

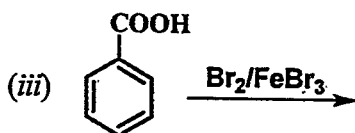
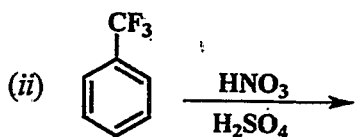
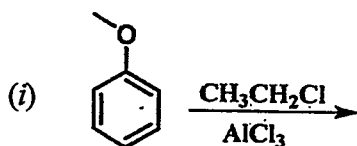


- (ii) Explain reason behind the formation of the major product.

- (c) Explain how the nature of solvent (i) water/alcohol and (ii) ether, affects the hydrolysis of tert. butyl chloride ?

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4. (a) (i) What do you mean by optical rotation ?
- (ii) A sample of compound X in chloroform (0.6g/ml) at 25°C, when taken in a cell of path length 1.0 dm, shows rotation of +3.0°. What is the specific rotation of sample ?
- (b) (i) Aniline on nitration gives meta derivative in significant amount. Explain.
- (ii) Explain the electrophilic addition of dihalogen (Br₂) to propene.
- (c) Write the name and complete the following reactions :



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5. (a) Halogens are ortho/para directing deactivators in electrophilic substitution reactions. Explain by drawing the resonating structures of carbocation formed by the attack of electrophilic attack on chlorobenzene.

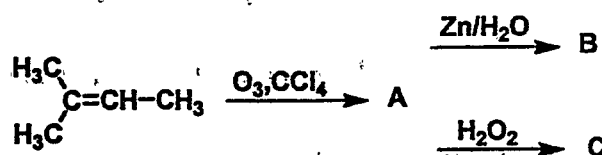
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(b) Predict the product of the reaction of 1-bromo-1-methylcyclohexane with :

(i) Sodium ethoxide in ethanol

(ii) Refluxing ethanol.

(c) Complete the following reactions :

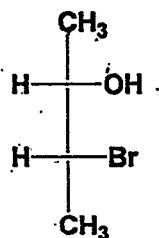


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6. (a) Explain electromeric effect with examples.

(b) Explain hydroboration oxidation reaction with mechanism.

(c) Convert stepwise Fischer projection to wedge projection and assign R/S descriptors :



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