

(d) Hydroboration-Oxidation reaction

(e) Markownikoff rule

(f) Cope elimination (3×5)

[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1232 D

Unique Paper Code : 2174001002

Name of the Paper : GE4 Basic Concept of Organic Chemistry

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

Semester : I

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
 2. Attempt any **four** questions.
 3. Each question carries equal marks.
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1. (i) Giving reasons, classify as **aromatic, non aromatic or anti aromatic** :

(2000)

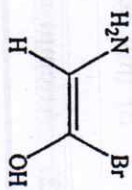
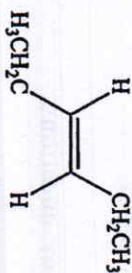
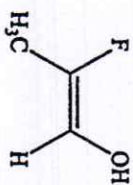
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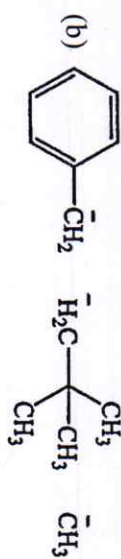
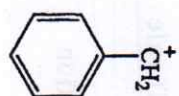
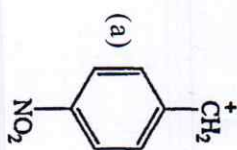
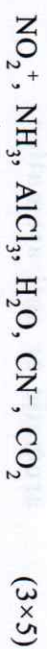
- (ii) What are *meso* compounds? Are the *meso* compounds optically active or inactive? Explain your answer through a suitable example.

- (iii) Discuss the stereochemical aspects of SN^1 and SN^2 reactions.

- (iv) Designate 'E' or 'Z' to the following double bonded compounds :



- (v) Classify the following as electrophiles and nucleophiles



6. Write short notes on the following (any five) :

(a) Saytzeff Elimination

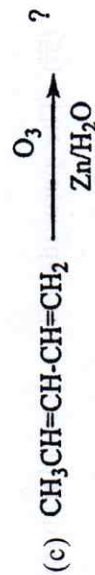
(b) Huckel's rule

(c) Hyperconjugation

- (iv) A sample of compound 'X' in chloroform (0.6 g/mL) at 25°C, when taken in a cell of pathlength 1.0 dm, shows rotation of +3.0°. What is the specific rotation of sample?

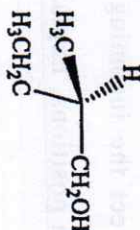
- (v) Draw the resonance forms of CO_3^{2-} and NO_2^- . (3×5)

5. (i) Complete the following reaction with mechanism:



- (ii) What is the order of stability of following reactive intermediates :

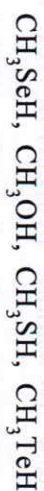
2. (i) Halogens are electron-withdrawing in nature yet they direct the incoming electrophile to ortho and para positions. Explain.
- (ii) How will you differentiate between Homolytic and Heterolytic fission? Explain using suitable examples.
- (iii) What is optical activity? What is the necessary condition for a molecule to be optically active?
- (iv) Draw Newmann projection for different conformers of n-butane. Which of the conformation is most stable and why?
- (v) Convert the following wedge-dash formula into Fischer Projection :



(3×5)

3. (i) How will you differentiate between E1 vs E2 Reaction Mechanisms.

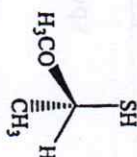
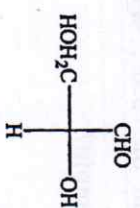
- (ii) Which of the following is the strongest nucleophile and why?



- (iii) Discuss the limitations of Friedel-Crafts alkylation.

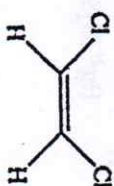
- (iv) How does the nature of a substituent affect the reactivity of aromatic ring system towards electrophilic substitution reactions?

- (v) Assign the **R** or **S** configuration to the following :

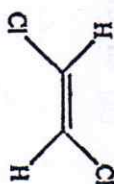


(3×5)

4. (i) Out of the following two alkenes, which one has a higher dipole moment and why?



or



- (ii) Write a brief note on role of Inductive effect in deciding the basic strength of the amines.

- (iii) The peroxide effect (anti-Markovnikov's rule) in alkenes is observed only in the addition of HBr and not HCl or HI. Explain why?