

[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 6006

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Your Roll No.....

Unique Paper Code : 217103

Name of the Course : B.Sc. (Hons.) CHEMISTRY – I

Name of the Paper : CHHT-102 : Organic Chemistry

Semester : I

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

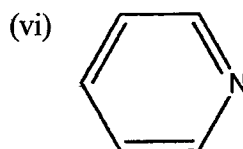
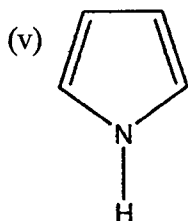
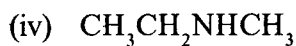
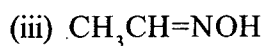
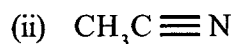
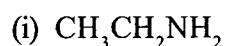
1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Answer **five** questions in all.

1. Attempt any **five** from the following :

(a) Giving, explanation, arrange the following in increasing order of stability
 CH_3CH_2^- , $(\text{CH}_3)_2\text{CH}^-$, $(\text{CH}_3)_3\text{C}^-$

(b) Out of $\text{CH}_3\text{CH}_2\text{NH}_2$ and CH_3CONH_2 , which one is more basic and why ?

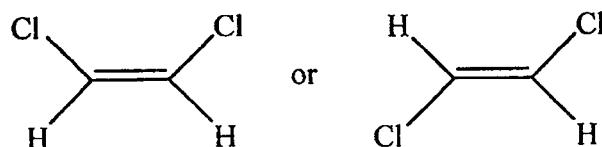
(c) What is the hybridization state of nitrogen in each of the following compounds :



(d) Out of $\text{CH}_3\text{CH}_2\text{OH}$ and CH_3OCH_3 , which one has a higher boiling point and why ?

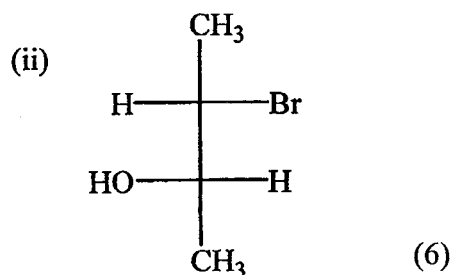
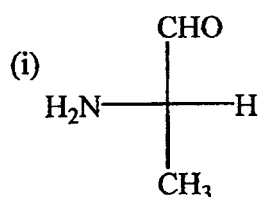
P.T.O.

- (e) Out of the following two alkenes, which one has a higher dipole moment and why?



- (f) Which one is more stable : $\text{CH}_3\text{CH}_2\text{CH}_2^+$ or $\text{CH}_2=\text{CH}-\text{CH}_2^+$. Give suitable explanation for your answer. (3×5)

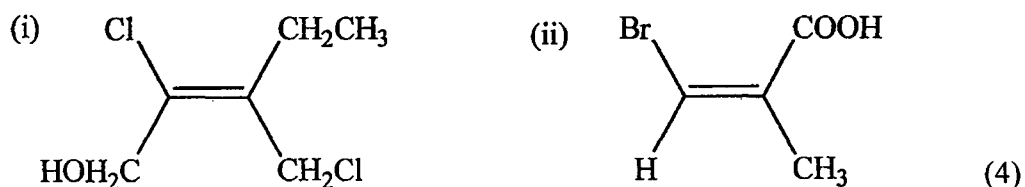
2. (a) Assigning priority order, give the R/S configuration of the following compounds :



- (b) Write Newman Projection for the Chair and Boat conformations of Cyclohexane. (3)
- (c) How many stereoisomers are possible for 2,3-dihydroxybutanedioic acid? Write the Fischer projections for these stereoisomers. What is the correlation among them. Indicate the optical activity of these stereoisomers? (6)
3. (a) Calculate the percentage of isomers formed during the monobromination of 2,3-dimethylbutane. The relative reactivity for 1° , 2° , 3° hydrogen are 1, 82 and 1600 respectively. (4)
- (b) Explain, with mechanism, the formation of major product obtained on reaction of 3-methylbut-1-ene with HBr. (4)
- (c) Chlorine is more reactive while bromine is more selective in its reaction with alkanes. Explain. (4)

(d) Why peroxide effect in alkenes is observed with HBr only ? (3)

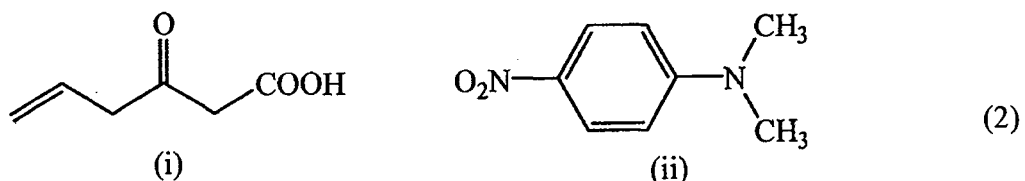
4. (a) Assigning the priority order, give the E/Z configuration of the following :



(b) Draw the Chair conformations of *cis* cyclohexane-1,3-diol. Giving suitable explanation, identify the most stable conformation. (4)

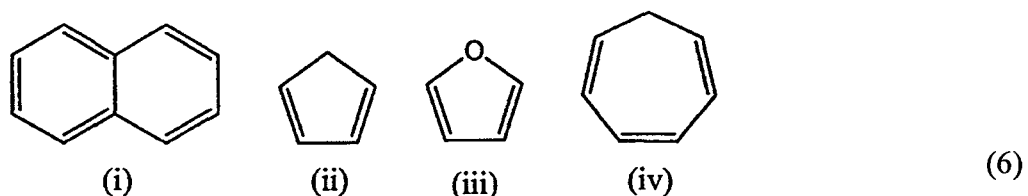
(c) Draw Newman Projection formulae for the different conformations of *n*-butane (about C₂ – C₃ bond). Arrange them in their decreasing order of stability, giving suitable explanation. (5)

(d) Give the IUPAC name of the following :



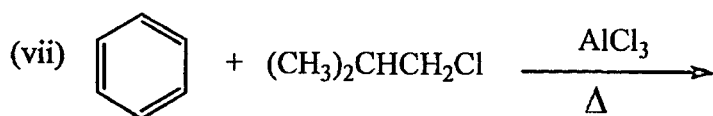
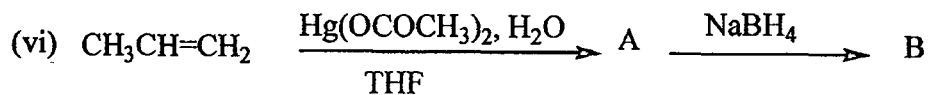
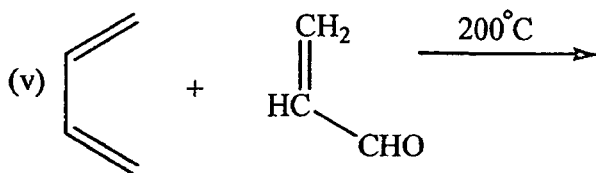
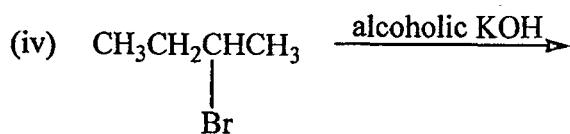
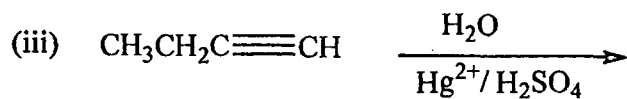
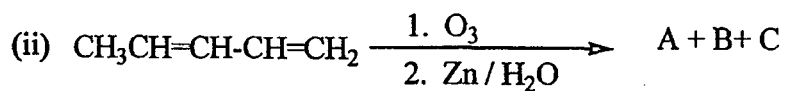
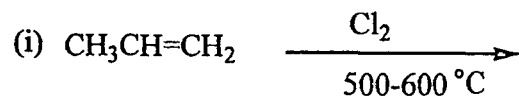
5. (a) With the help of mechanism, explain Friedel Crafts Alkylation in Benzene. (5)

(b) Giving reasons, classify as aromatic, non aromatic or anti aromatic.



(c) Although Chlorine deactivates the benzene ring it is ortho and para directing in nature. Justify. (4)

6. Complete the following reactions :



(1.5×10)