

Roll No.

(05/16-I)

5190**B. Sc. (Part I) EXAMINATION**

(For Batch 2014 & Onwards)

(Second Semester)

CHEMISTRY

Organic Chemistry

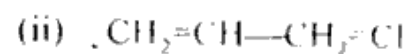
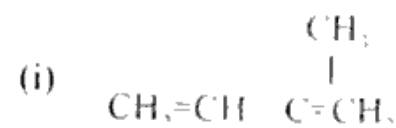
Paper-III (CH-103)

Time : Three Hours

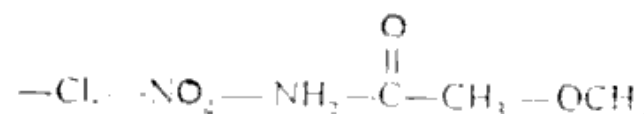
Maximum Marks : 27

Note : Attempt *Five* questions in all, selecting *one* question from each Section. Q. No. **1** is compulsory. All questions carry equal marks.

1. (a) Arrange the following set of alkenes in decreasing order of stability : But-1-ene, Z-but-2-ene, isobutylene and E-but-2-ene. 1
- (b) Write IUPAC names of the following : 1



- (c) Define Huckel's rule of aromaticity with examples. 1
- (d) What will happen when propyne reacts with Fehling solution ? 1
- (e) What is Lindlar's catalyst ? 1
- (f) Select the following as isolated, cumulated or conjugated diene by giving a suitable reason : 1
 - (i) $\text{CH}_2=\text{CH}-\text{CH}=\text{CH}_2$
 - (ii) $\text{CH}_2=\text{C}=\text{CH}_2$
 - (iii) $\text{CH}_2=\text{CH}-\text{CH}=\text{CH}_2$
- (g) What are ring activating substituents ? Identify the ring activating and deactivating substituents out of the following : 1



Section I

2. (a) Write the cyclic halonium ion mechanism of halogenation of alkenes. Give limitations of the carbocation mechanism.

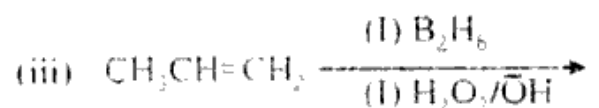
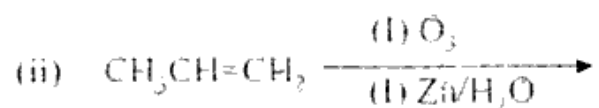
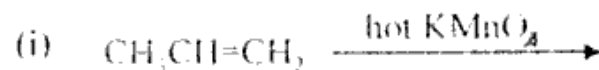
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- (b) State Markownikoff's rule. Explain the addition of HCl to $\text{CH}_3\text{-CH=CH}_2$ using this rule.

1½

- (c) Complete the following reactions :

1½



3. (a) Give the mechanism of hydroboration-oxidation of alkenes with suitable example.

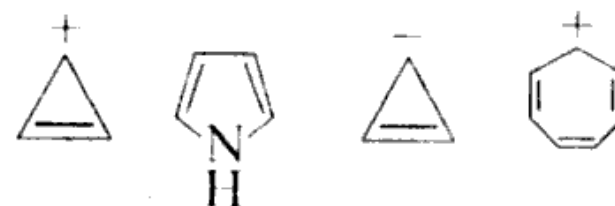
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P.T.O.

- (b) Identify aromatic out of the following by giving suitable reason :

2



- (c) Give the energy profile diagram for aromatic electrophilic substitution.

1

4. (a) Discuss the mechanism of sulphonation of benzene. Mention the rate determining step of the reaction.

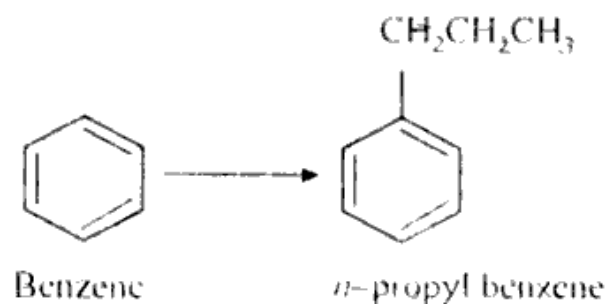
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- (b) Explain the fact that halogens are *ortho*, *para*-directing groups but they deactivate the benzene ring for further substitution.

1½

- (c) Friedel-Crafts alkylation is not preferred for the following conversion. Why ?

1½

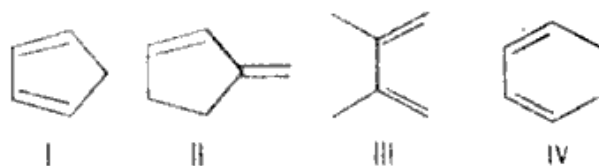


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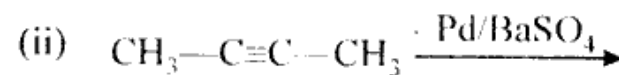
Section II

5. (a) Arrange the following dienes in order of decreasing reactivity towards a dienophile in Diels-Alder reaction : 1



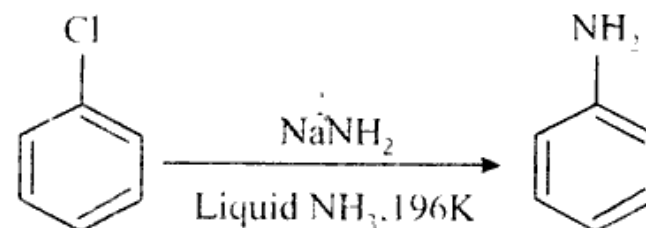
- (b) Discuss the mechanism of 1,2- and 1,4-addition reaction of buta-1,3-diene by taking a suitable example. 2
- (c) Give products and mechanism of addition of BrCCl_3 to buta-1,3-diene in presence of peroxide. 2
6. (a) Explain the difference in acidic strength between terminal alkynes and internal alkynes by taking a suitable example. $1\frac{1}{2}$
- (b) Compare the reactivity of alkynes and alkenes in electrophilic addition reactions by giving suitable reasons. 2

- (c) Complete the following reactions :



7. (a) Discuss the mechanism of $\text{S}_\text{N}1$ reaction. Also give its potential energy diagram. 2

- (b) Give the mechanism of the following reaction : $1\frac{1}{2}$



- (c) Explain, why aryl halides are less reactive than alkyl halides towards nucleophilic substitution reactions. $1\frac{1}{2}$