

Roll No. ....

(05/16-I)

**5174**

**B. Sc. EXAMINATION**

(For Batch 2011-2013 Only)

(Second Semester)

**CHEMISTRY**

Sixth Paper (CH-106)

Organic Chemistry

*Time : Three Hours*

*Maximum Marks : 27*

**Note :** Attempt *Five* questions in all. Q. No. 1 is compulsory. Attempt *four* questions from Sections A and B, selecting *two* questions from each Section.

**Compulsory Question**

1. (a) Predict the product of the pyrolysis of ethyldimethyl-n-propylammonium hydroxide.

1

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P.T.O.

(b) How will you convert propan-2-ol to propan-1-ol ? 1

(c) Explain, why cyclopentadiene is acidic ? 1

(d) Arrange the following compounds in order of increasing reactivity towards electrophilic substitution reactions :

benzene, aniline, acetophenone and acetanilide 1

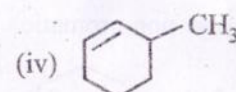
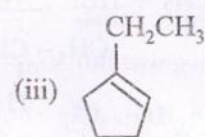
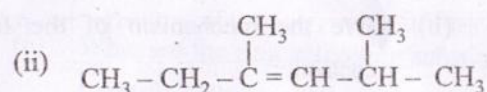
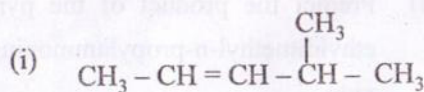
(e) What is the product of hydroboration-oxidation of propyne ? 1

(f) Give the IUPAC names of the possible products when buta-1,3-diene reacts with one and two moles of HBr. 1

(g) Draw the energy profile diagram of  $S_N2$  reaction. 1

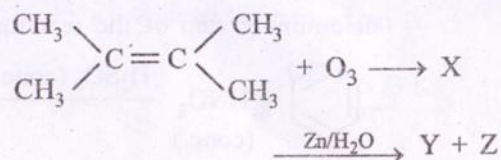
#### Section A

2. (a) Write the IUPAC names of the following : 2



(b) Dehydration of butan-1-ol by conc.  $\text{H}_2\text{SO}_4$  yields but-2-ene instead of but-1-ene. Explain.

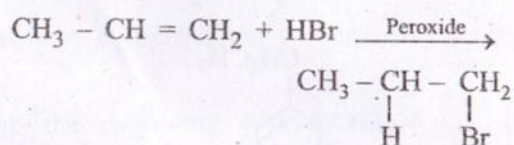
(c) Complete the following :



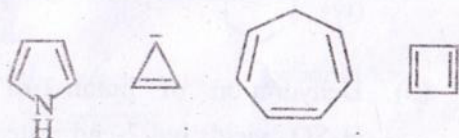
3. (a) Explain Saytzeff rule taking the example of dehydrohalogenation of alkyl halides to form alkenes. 2



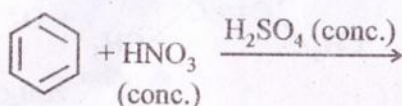
- (b) Give the mechanism of the following reaction : 2



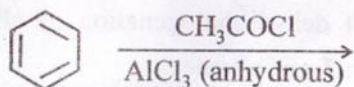
- (c) Select the following as aromatic, antiaromatic and non-aromatic. 1



4. (a) Write the product and mechanism of following reaction. Mention the rate determining step of the reaction. 2



- (b) Explain the mechanism of the following reaction : 2

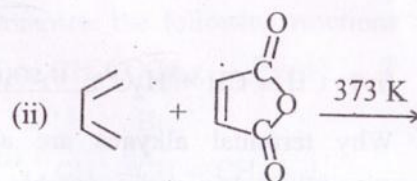
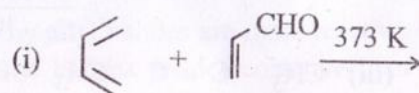


- (c) What are the ring activating substituents ? Identify the ring activating and deactivating substituents out of the following :

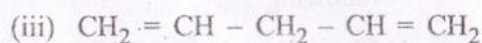
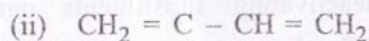
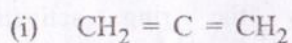
Cl,  $-\text{NH}_2$ ,  $-\text{NO}_2$ ,  $-\text{OH}$ ,  $-\text{CN}$

### Section B

5. (a) On the basis of molecular orbital picture, explain why conjugated dienes are more stable than non-conjugated dienes. 2
- (b) Complete the following reactions and also explain why these reactions are called [4+2] cycloaddition reaction ? 2

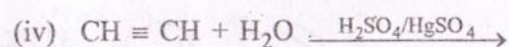
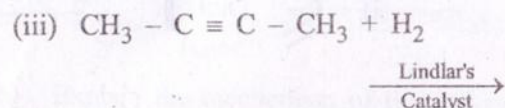
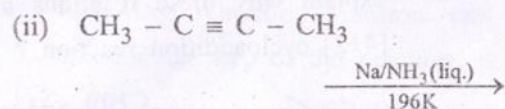
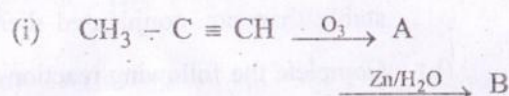


(c) Write IUPAC names of : 1



6. (a) Out of the alkynes and alkenes, which is more reactive towards electrophilic addition reactions ? 2

(b) Complete the following reactions :

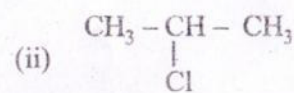
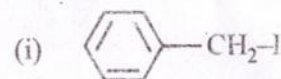


(c) Why terminal alkynes are acidic in nature ? Explain giving suitable example. 1

7. (a) Differentiate between  $\text{S}_{\text{N}}^1$  and  $\text{S}_{\text{N}}^2$  reactions. 2

(b) Give the elimination-addition mechanism of conversion of chlorobenzene into aniline. 2

(c) Write IUPAC names of the following : 1



8. (a) Nitro group deactivates the aromatic ring towards electrophilic substitution and yet it activates the aryl halides towards nucleophilic substitution. Give reasons. 2

(b) Why allyl halides are more reactive while vinyl halides are less reactive than alkyl halides ? 2

(c) Complete the following reactions : 1

