

# UKA TARSADIA UNIVERSITY

B.Pharm. (2nd Semester)

Subject :030020202-Organic Chemistry I

Time : 2:30 pm to 5:30 pm

Duration : 3 Hours

Date : 30/11/2013

Max. Marks : 70.

## Instructions:

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks allocated to that question.
5. Draw diagrams/figures whenever necessary.

## SECTION - 1

### Q-1 (A) Do as directed.

[07]

- I) Define empirical formula with example.
- II) Comment pi bond is weaker than sigma bond.
- III) Give structural formula for Propene.
- IV) What is Resonance? Give Example
- V) Complete thiophene +  $\text{Cl}_2$  -----→
- VI) What are electrophiles give 2 example
- VII) Homolytic fission of covalent bond between carbon atoms will give Free radicals True/False.

### Q-1 (B) Answer the following in brief. (Any 4)

[08]

- I) Explain Hyperconjugation with suitable example
- II) Explain Carbenes as reaction Intermediates
- III) Explain 3-preparation methods of Alkenes.
- IV) Explain Tautomerism with suitable example
- V) Comment Alkenes undergo electrophilic addition reaction
- VI) Find the Empirical & Molecular formula of a monobasic acid containing C=40%, H=6.67% and having equivalent weight 60.

### Q-2 Answer the following.

[10]

- A) Explain Hybridization its types and Hybrid Orbital's with suitable example. Indicate the type of Hybridization of each carbon atom in following structures a)  $\text{CH}_3\text{CH}_3$  b)  $\text{CH}_3\equiv\text{CH}_3$  c)  $\text{CH}_2=\text{C}=\text{CH}_2$ .

**OR**

- A) Explain Electromeric effect with example. Define Tautomerism & explain with suitable E.g. Which of the following statements is false about Tautomers.

- a) Tautomers are structural Isomers.
- b) Tautomerism involves movement of atoms.
- c) Tautomers have independent existence.

- B) How is Ethylene prepared in lab? Give 2 reaction example of ethylene & what happens when Ethylene is treated with i) Dil.  $\text{H}_2\text{SO}_4$  ii)  $\text{HBr}$  iii)  $\text{Br}_2$

**OR**

- B) Explain Why four Covalent bonds in methane are equivalent. And explain orbital structure of Methane.

### Q-3 Answer the following in detail. (Any 2)

[10]

- A) Give general structure, nomenclature & preparation method of any 5 alkanes
- B) Discuss in detail Carbocation & carbanion and comment on their stability
- C) Explain in detail Electronegativity and Polarity of bonds & molecules.

## SECTION - 2

### **Q-4 (A) Do as directed.**

[07]

- I) Define Racemic mixture.
- II) A molecule is said to be Chiral if it cannot be superimposed on its mirror image (True/False)
- III) Name the analytical instrument used to distinguish Optical Isomerism.
- IV) Define Geometrical Isomers.
- V) Ethers are Lewis bases true / false.
- VI) Methyl alcohol is produced by fermentation of sugar true/false.
- VII) A primary alcohol of formula  $C_5H_{12}O$  is optically active, what is its structure?

### **Q-4 (B) Answer the following in brief. (Any 4)**

[08]

- I) Write a note on optical Isomerism of lactic acid.
- II) Glucose, which has four chiral carbon atoms will have how many stereoisomers.?
- III) Give synthesis scheme for 1,3 butadiene from 1-butene
- IV) Write a note on Racemization
- V) Give lab. Preparation method for Ethyl bromide.
- VI) What are epoxides? Give 1 preparation method for ethylene oxide.

### **Q-5 Answer the following.**

[10]

- A) What is Geometrical Isomerism? What are necessary conditions for a compound to show Geometrical Isomerism. Among the following which show Geometrical isomerism. a) 2-butene b) 2-methyl 2 butene c) 2-pentene d) 1,2 dichloropropane

**OR**

- A) Explain measurement of Optical activity . Define Specific rotation and explain specific rotation of one enantiomer of 2-butanol is + 13.5 degree then what is specific rotation of the other enantiomer ?
- B) Draw stereochemical (3 dimensional) structural formula of all possible Isomers and specify configuration of each isomers of the following i) 2-chlorobutane ii) 2-hexane 3) 2,3 hexadiene

**OR**

- B) What are dienes? Give the general structure, properties, preparation and reaction of Dienes.

### **Q-6 Answer the following in detail. (Any 2)**

[10]

- A) What are differences between Ether & Epoxide? Give the methods for the preparation of Epoxide.
  - B) Write a note on stereoselective & stereospecific reaction with example. Give applications of Microwave synthesis
  - C) Define Conformation. Discuss the stability & potential energy changes of all conformation for n-Butane.
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