Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – SUMMER • 2014

Subject Code: 133501 Date: 04-06-2014

Subject Name: Organic Chemistry for Technologist - I

Time: 02.30 pm - 05.00 pm Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Write a note on:

a. Diastereomers. **04**

b. Optical isomerism of Lactic acid. **03**

(b) Explain the following terms with suitable examples:

a. Carboniumions and Carbanions **04**

b. Electrophiles and Nucleophiles **03**

Q.2 **(a)** What happens when, **07**

a. Ethyl iodide is treated with KSH.

b. Ethanethiol is treated with KOH.

c. Ethanethiol is added to lead acetate solution.

d. Ethanethiol is passed over a mixture of alumina and Zinc sulfide at 300^0C.

e. Thioether oxidized by mild oxidizing agent.

f. Thioether react with halogen.

(b) How are alkanes prepared? Describe their important reactions. **07**

OR

(b) 1. How will you distinguish between acetaldehyde and acetone? **04**

2. How will you distinguish between formaldehyde and acetaldehyde? **03**

Q.3 **(a)** 1. How does diethyl ether react with the following reagents? **04**

a. O_2/long contact

b. Cold Conc. H_2SO_4

c. PCl_5

2. A hydrocarbon (A) adds one mole of hydrogen in the presence of a platinum catalyst to form n-Hexane. When (A) is oxidized with hot concentrated $KMnO_4$, a single carboxylic acid containing three carbon atom is isolated. Give the structure and name of (A). **03**

(b) Write a note on: **07**

a. Diazotization reaction.

b. Hoffman reaction.

OR

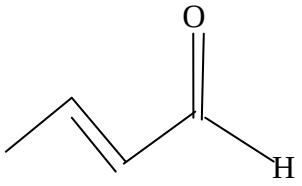
Q.3 **(a)** Define the term Geometrical Isomerism. State the necessary conditions for a compound to show Geometrical Isomerism. Illustrate your answer with examples. **07**

(b) 1. Draw structure corresponding to the following IUPAC names; **03**

a. 2-amino-3-hydroxy-4-oxopentan-1-oicacid.
b. 3-chloroprop-1-ene
c. 1-Ethoxy-1-propanol

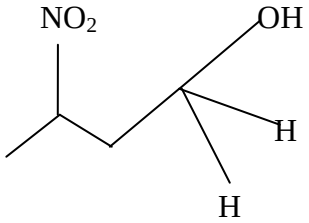
2. Write the IUPAC names for each of the following compounds; **04**

a.

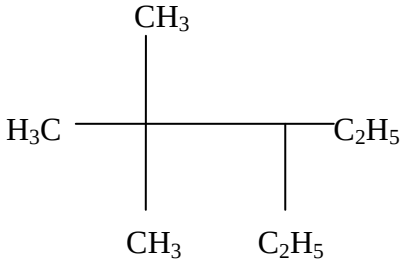


b

c.



d.



Q.4 **(a)** Give only reaction for following conversion: **07**

a. n-propyl alcohol → Isopropyl alcohol
b. Isopropyl bromide → n-propyl bromide
c. Isopropyl alcohol → Propane

(b) Write a note on: Oxidation of alcohol. **07**

OR

Q.4 **(a)** 1. A compound with formula $C_3H_8O_2$ has two –OH group and is optically active. What is its structure? **03**

2. Give only reaction for following conversion: **04**

a. Benzene → Benzaldehyde
b. Benzaldehyde → Benzene

(b) Discuss the mechanism of SN^1 and SN^2 reaction of alkyl halide. **07**

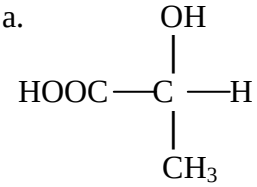
Q.5 **(a)** How does CH≡CH react with the following reagents? **07**

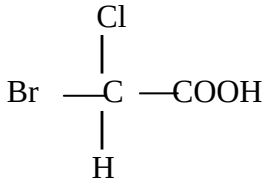
a. H_2/Pd
b. $AgNO_3/NH_4OH$
c. $HCN/Ba(CN)_2$
d. HBr
e. Cu_2Cl_2/NH_4OH
f. Na/liq. NH_3
g. $H_2/Pd/BaSO_4$

(b) Explain Hydrogenation and Ozonolysis reaction with mechanism. **07**

OR

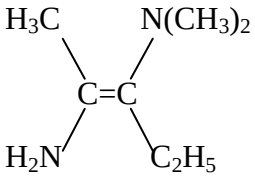
Q.5 **(a)** 1. Assign R,S configuration to each of the following; **02**

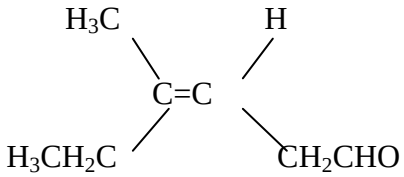
a. 

b. 

2. Assign E,Z notation to each of the following; **02**

a. b.





3. Define Racemic mixture. Does Racemic mixture have an Optical Isomerism? Give reason. **03**

(b) Draw the structure of following compound and explain which of the following compound show Geometrical Isomerism: **07**

a. 2-methyl-2-butene
b. 2-pentene
c. 1,2-diiodobutane
d. 2-hexene

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