Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEMESTER–III EXAMINATION – SUMMER 2015

Subject code: 133501 **Date: 09/06/2015**

Subject Name: Organic Chemistry for Technologist-I

Time:02.30pm-05.00pm **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)** How is ethyl mercaptan prepared? How does ethyl mercaptan react with; **07**

a. Sodium hydroxide b. Lead acetate c. Iodine
d. Acetaldehyde e. Hydrogen peroxide
f. Acetyl chloride

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

Q.2 **(a)** Write a note on: **07**

a. Optical isomerism of 2, 3-dibydroxybutanedioicacid.
b. Meso compound

(b) What is the structure of carbonyl group? How does it react with; **07**

a. HCN b. $NaHSO_3$ c. NH_2OH.

OR

(b) Write a equation for the preparation of n-butane from, **07**

a. n-Butyl bromide
b. Ethyl bromide
c. 2-Butene

Q.3 **(a)** Draw structure corresponding to the following IUPAC names; **07**

a. 2-methyl-1,5-hexadiene
b. 2-ethyl-2,2-dimethyl-3-heptene
c. 2-amino-3-hydroxy-4oxopentan-1-oicacid
d. 1-methyl-1,3-cyclopentadiene
e. 1,5-heptadiyne
f. 3-chloroprop-1-ene
g. 2-methyl-4-nitro-2-pentanol

(b) 1. How will you distinguish between acetaldehyde and acetone? **07**
2. How will you distinguish between formaldehyde and acetaldehyde?

OR

Q.3 **(a)** Write the IUPAC names for each of the following compounds: **07**

a. CH_3-CH(CN)-CH=CH-CO-CH_2-CHO
b. $HOCH_2CH_2CH_2COOH$
c. $CH_2{=}CHCH_2CH_2CONH_2$
d. $CH_3CH_2COCH_2CHO$
e. $CH_3CH_2CH(OCH_3)CH_2OH$
f. $HC{\equiv}CCH_2CH{=}CH_2$
g. $CH_3C{\equiv}C\ CH_2CH_2C{\equiv}CH$

(b) 1. How does primary, secondary and tertiary alcohol differ in their behavior towards oxidation? **05**

2. Which of the following compound show Geometrical isomerism? **02**

a. $CH_3C{=}CCHCH_3$
   | |
   Br Br

b. $(CH_3)_2C{=}C(CH_3)_2$

Q.4 **(a)** Write a note on:

a. Hoffman reaction. **03**

b. Diazotization reaction. **04**

(b) 1. A hydrocarbon of formula C_6H_{12} decolorizes bromine solution, dissolves in concentrated sulfuric acid, yields 2-methylpentane on hydrogenation, and on ozonolysis gives formaldehyde and 3-methylbutanal. What is the structure of hydrocarbon? **03**

2. How will you synthesize n-propyl bromide from isopropyl bromide? **04**

OR

Q.4 **(a)** 1. How does diethyl ether react with following reagents? **03**

a. O_2/ long contact

b. Cold Conc. H_2SO_4

c. PCl_5

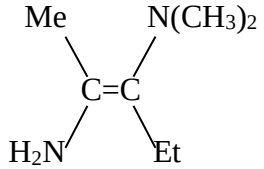
2. How does ethyl iodide react with CH_3COOH, Mg, Alcoholic KOH & Na.? **04**

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

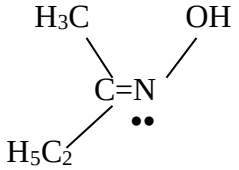
Q.5 **(a)** Write Physical properties of alcohol with explanation **07**

(b) 1. Assign E,Z notation to each of the following; **02**

a.

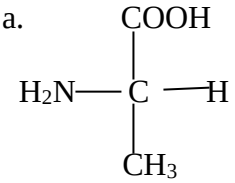


b.

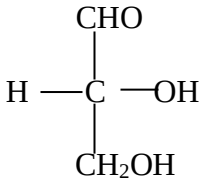


2. Assign R,S configuration to each of the following; **02**

a.



b.



3. Which of the following will exhibit optical activity? **03**

a. Meso-2,3-Dihydroxybutane

b. Mixture of 1 gm of (+)-erythro-2-bromo-3-chloro butane & 0.5 gm (-)-erythro-2-bromo-3-chloro butane

c. Racemic mixture of 2-Hydroxy propanoicacid

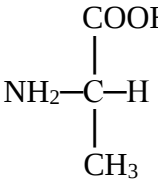
OR

Q.5 **(a)** 1. A compound with formula $C_3H_8O_2$ has two -OH group and is optically active. What is its structure? **03**

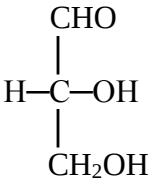
2. Explain the term: Electrophile & Nucleophile with suitable example. **04**

(b) 1. Assign R, S configuration to each of the following compound: **02**

a.



b.



2. Write a note on: Ozonolysis of alkene. **05**

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