Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III EXAMINATION – SUMMER 2016

Subject Code:133501 **Date:09/06/2016**

Subject Name:Organic Chemistry for Technologists-I

Time:10:30 AM to 01:00 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)** How is diethyl sulfide prepared? How does diethyl sulfide react with, **07**
(a) CH_3CH_2Br (b) Br_2
(c) aqueous KOH (d) H_2O_2

(b) Write a note on: Aldol & Cross aldol reaction. **07**

Q.2 **(a)** Write a note on:
a. Optical isomerism of Tartaric acid. **04**
b. Optical isomerism of Lactic acid **03**

(b) 1. What are carbonium ions? Arrange the following according to their increasing stability. Explain your answer; **04**
a. $CH_3CH_2CH_2CH_2$ +
b. $(CH_3)_3C$ +
c. $CH_3CH_2(CH_3)CH$+

2. Explain why benzyl carbonium ion is more stable than ethyl carbonium ion. **03**

OR

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

Q.3 **(a)** What is the structure of carbonyl group? How does it react with; **07**
a. HCN
b. $NaHSO_3$
c. NH_2OH.

(b) What happen when acetylene is passed through, **07**
a. Ammonical silver nitrate solution.
b. Dil. Sulfuric acid in presence of mercuric sulfate.
c. Red hot iron tube.

OR

Q.3 **(a)** Discuss the mechanism of SN^1 and SN^2 reaction of alkyl halide. **07**

(b) How are Thiols prepared? Discuss their chemical properties. **07**

Q.4 **(a)** 1. Draw structure corresponding to the following IUPAC names; **04**
a. 3-Cyclopentylbuta-1,3-diene
b. 6-Cyano-3-oxo-4-heptenal
c. 1-Ethoxy-1-propanol
d. 1,5-heptadiyne

2. Explain the following terms ; **03**
c. Electrophile
d. Nucleophile

(b) Explain Hoffman reaction with mechanism. **07**

OR

Q.4 **(a)** 1. How will you synthesize 1-bromopropane from 2-bromopropane? **07**
2. Write structural formulas for all alkyl bromides of molecular formula $C_5H_{11}Br$.

(b) 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. $CH_3C{\equiv}C\ CH_2CH_2C{\equiv}CH$

Q.5 **(a)** 1. A primary alcohol of formula $C_4H_{10}O$ is optically active, what is its structure? **02**

2. A compound with formula $C_3H_8O_2$ has two –OH group & is optically active, what is its structure? **02**

3. How will you synthesize 1-bromopropane from 2-bromopropane? **03**

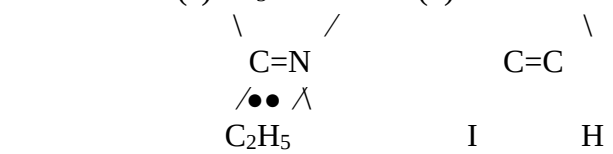
(b) Write only chemical reaction for following conversion: **07**

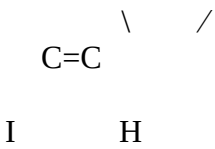
a. Benzene →Benzaldehyde

b. Benzaldehyde →Benzene

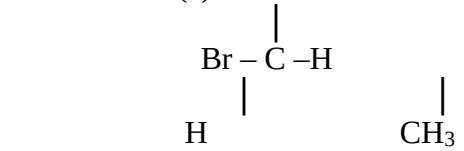
OR

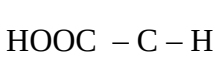
Q.5 **(a)** 1.Assign E,Z notation to each of the following **02**

(a) 

(b) 

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

(a) 

(b) 

3. Which of the following compound show geometrical isomerism? **03**

a. $CH_3CH{=}CH_2$

b. $CH_3CH_2CH_2CH{=}CHCH_3$

c. $CH_3C{=}CCHCH_3$ (Br, Br)

(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? Give IUPACname also. **05**

2.Define homolytic& heterolytic bond fission of a covalent bond **02**

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