

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER • 2014****Subject Code: 133501****Date: 01-01-2015****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.

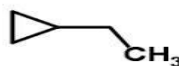
- Q.1 (a)** Write a note on: **03**
- a. Cannizzaro reaction **04**
 - b. Hoffman reaction **07**
- (b)** What happens when, **07**
- a. Ethyl iodide is treated with K_2S .
 - b. Diethyl ether is heat with P_2S_5 .
 - c. Ethanethiol is passing over a mixture of alumina & zinc sulfide at $300^\circ C$.
 - d. Diethyl sulfide reacts with ethyl bromide.
 - e. Diethyl ether reacts with bromine.
 - f. Diethyl sulfide reacts with H_2O_2 at $20^\circ C$ and $100^\circ C$.

- Q.2 (a)** How is diethyl ether prepared? Explain its chemical properties also. **07**
- (b)** How does $CH \equiv CH$ react with the following reagents? **07**
- (i) H_2/Pd
 - (ii) $H_2/Pd/BaSO_4$
 - (iii) HBr
 - (iv) Cu_2Cl_2/NH_4OH
 - (v) $Na/liqNH_3$
 - (vi) $AgNO_3/NH_4OH$
 - (vii) $HCN/Ba(CN)_2$

OR

- (b)** Explain Wurtz synthesis, Corey-house synthesis and Kolbe's synthesis for preparation of Alkane. **07**

- Q.3 (a)** Write the IUPAC names for each of the following compounds; **07**
- (i)
 - (ii)



- (iii) $CH_3CH_2COCH_2CHO$
- (iv) $(CH_3CH_2)_2CHCN$
- (v) $CH_3CH_2COCH_2CH_2COOCH_3$
- (vi) $HC \equiv CCH_2CH=CH_2$
- (vii) $HC \equiv CCH_2CH=CH_2$

- (b)** (i) How will you synthesize 1-bromopropane from 2-bromopropane? **02**
- (ii) Write structural formulas for all alkyl bromides of molecular formula $C_5H_{11}Br$. **05**

OR

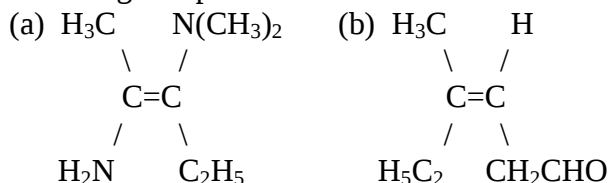
- Q.3 (a)** (i) Draw structure corresponding to the following IUPAC names; **04**
- a. 1,5-heptadiyne
 - b. 2-amino-3-hydroxy-4-oxo-pentan-1-oic acid
 - c. 6-cyano-4-heptenal
 - d. 1-methyl-1,3-cyclopentadiene
- (ii) Give the mechanism for the reaction of methyl bromide with aqueous $NaOH$ to form methyl alcohol. **03**
- (b)** Define substitution reaction. Explain free radical substitution reaction with mechanism. **07**

- Q.4 (a)** Write a note on:
- Optical isomerism of 2, 3-dihydroxybutanedioic acid. **04**
 - Stability of Carbonium ion. **03**
- (b)**
- How will you synthesize acetaldehyde from formaldehyde? **02**
 - How will you synthesize acetone from acetaldehyde? **02**
 - How will you distinguish between aniline & N-methyl aniline? **03**

OR

- Q.4 (a)**
- Define Geometrical isomerism. State the necessary condition for a compound to show Geometrical isomerism. Illustrate your answer with examples. **04**
 - What is Inductive effect? Give one example of a system where this effect is operative. **03**
- (b)**
- A primary alcohol of formula $C_4H_{10}O$ is optically active, what is its structure? **02**
 - A compound with formula $C_3H_8O_2$ has two $-OH$ group & is optically active, what is its structure? **02**
 - Explain the term: Electrophile & Nucleophile. **03**

- Q.5 (a)** (i) What do you understand by E, Z notation? Assign E or Z configuration to each of the following compound. **03**

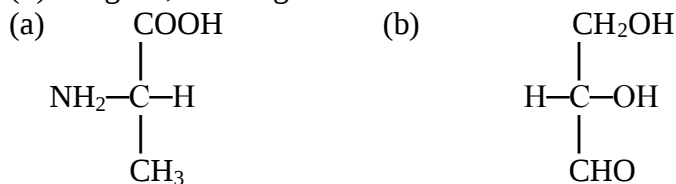


- (ii) Give only reaction for following conversion:

- Benzene $\rightarrow$ Aniline **02**
- Aniline $\rightarrow$ p-bromo aniline **02**

- (b)** (i) Describe homolytic & heterolytic fission of a covalent bond. How carbocation, carbanion & free radicals are formed. **05**

- (ii) Assign R, S configuration to each of the following compound: **02**



OR

- Q.5 (a)** Draw the structure of following compound and explain which of the following compound show Geometrical Isomerism: **07**
- 2-methyl-2-butene
 - 2-pentene
 - 1,2-diiodobutane
 - 2-hexene
- (b)** How are thiols prepared? Discuss their chemical properties. **07**
