

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-III (OLD) EXAMINATION – WINTER 2017****Subject Code:133501****Date:14/11/2017****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) Write the structural formulas and give IUPAC names for all isomeric alcohols of the molecular formula  $C_5H_{12}O$  **07**  
 (b) How are alkanes prepared? Give their classification. **07**
- Q.2** (a) 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)  $HCN/Ba(CN)_2$   
 (b) What is the structure of carbonyl group? How does it react with;  
 a.  $HCN$  b.  $NaHSO_3$  c.  $NH_2OH$ . **07**
- OR**
- (b) How are thioethers prepared? Discuss their chemical properties. **07**
- Q.3** (a) Discuss the mechanism of  $SN_1$  and  $SN_2$  reaction of alkyl halide. **07**  
 (b) 1. How does diethyl ether react with the following reagents? **03**  
 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 is isolated. Give the structure and name of (A). **04**
- OR**
- Q.3** (a) 1. What are Carbonium ions? Arrange the following according to their increasing stability. Explain your answer. **03**  
 a.  $CH_3CH_2CH_2CH_2^+$  b.  $(CH_3)_3C^+$  **04**  
 c.  $CH_3CH_2(CH_3)CH^+$   
 2. Explain why benzyl carbonium ion is more stable than ethyl carbonium ion.  
 (b) Write a equation for the preparation of n-butane from, **07**  
 a. n-Butyl bromide  
 b. Ethyl bromide  
 c. 2-Butene
- (a) Write a note on: Oxidation of alcohol. **07**
- Q.4** (b) Give only reaction for following conversion: **07**  
 a. n-propyl alcohol  $\rightarrow$  Isopropyl alcohol  
 b. Isopropyl bromide  $\rightarrow$  n-propyl bromide  
 c. Isopropyl alcohol  $\rightarrow$  Propane

**OR**

- Q.4 (a)** Explain Wurtz synthesis, Corey-house synthesis and Kolbe's synthesis for preparation of Alkane. **07**
- (b)** (i) Define Geometrical isomerism. State the necessary condition for a compound to show Geometrical isomerism. Illustrate your answer with examples. **04**  
(ii) What is Inductive effect? Give one example of a system where this effect is operative. **03**
- Q.5 (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)** (i) Describe homolytic & heterolytic fission of a covalent bond. How carbocation, carbanion & free radicals are formed. **03**  
(ii) Write a note on Diazotization reaction. **04**
- OR**
- Q.5 (a)** Write Physical properties of alcohol with explanation **07**
- (b)** Write only chemical reaction for following conversion: **07**
- a. Benzene → Benzoic acid
  - b. Benzaldehyde → Nitrobenzene

\*\*\*\*\*