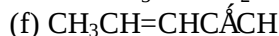
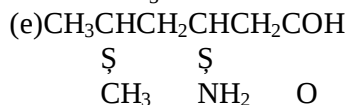
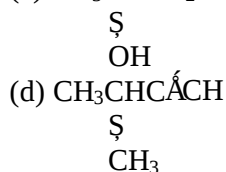


GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – SUMMER 2013****Subject Code: 133501****Date: 04-06-2013****Subject Name: Organic Chemistry for Technologist - I****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

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

- Q.1** (a) How is diethyl sulfide prepared? How does diethyl sulfide react with, **07**
(a) $\text{CH}_3\text{CH}_2\text{Br}$ (b) Br_2
(c) aqueous KOH (d) H_2O_2
(b) Explain (i) The relative stability of 1° , 2° , 3° carbonium ion. **07**
(ii) Why benzyl carbonium ion is more stable than ethyl carbonium ion.
- Q.2** (a) Write a note on (i) Optical isomerism of Tartaric acid. **07**
(ii) Optical isomerism of Lactic acid.
(b) Give two methods for the preparation of propene. What happens when **07**
propene is treated with,
(a) Br_2/CCl_4 (b) $\text{HBr}/\text{H}_2\text{O}_2$
(c) HOCl (d) $\text{Cl}_2/500^\circ\text{C}$
(e) Cold dil. KMnO_4
- 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) How do 1° , 2° , 3° alcohol differ in their behavior towards oxidation? **07**
(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) Write a note on : Aldol and Cross aldol condensation with mechanism **07**
(b) Write the structural formulas and give IUPAC names for all isomeric alcohols **07**
of the molecular formula $\text{C}_4\text{H}_{10}\text{O}$.
- Q.4** (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) 1-ethoxy-1-propanol
(d) 1-methyl-1,3-cyclopentadiene
(e) 1,5-heptadiyne
(f) 2,2,4-trimethyl pentane
(g) 2-methyl-4-nitro-2-pentanol
(b) (i) A hydrocarbon (A) decolorizes dilute KMnO_4 solution. (A) react with **07**
concentrated sulfuric acid to form an alkyl hydrogen sulfate which on
hydrolysis yields 2- Butanol. On ozonolysis (A) gives formaldehyde and
propionaldehyde. What is the structural formula of (A)?
(ii) Give the mechanism of electrophilic addition reaction.
- OR**
- Q.4** (a) Write the IUPAC names for each of the following compounds; **07**

- (a) $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CN}$
 (b) $\text{CH}_2=\text{CHCH}_2\text{CH}(\text{CH}_3)_2$
 (c) $\text{CH}_3\text{CHCH}_2\text{COOH}$



- (b) (i) A compound with formula $\text{C}_3\text{H}_8\text{O}_2$ has two -OH group and is optically active. What is its structure? **07**
 (ii) Explain the term: Electrophile & Nucleophile with suitable example.

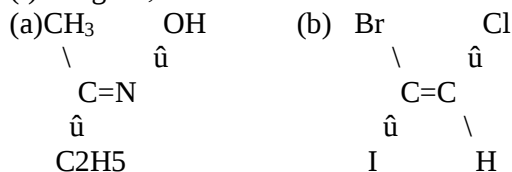
Q.5 (a) Which of the following will exhibit optical activity? **07**

- (a) Meso-2,3-dibromobutane
 (b) (+)-2,3-dibromobutane
 (c) Mixture of 1 gm of (+)-erythro-2-bromo-3-chloro butane & 0.5 gm (-)-erythro-2-bromo-3-chloro butane
 (d) (-)-erythro-2-bromo-3-chloro butane
 (e) Mixture of 1 gm of (+)-erythro-2-bromo-3-chloro butane & 1 gm (-)-erythro-2-bromo-3-chloro butane
 (f) (-)-2,3-dibromobutane
 (g) Racemic mixture of lactic acid

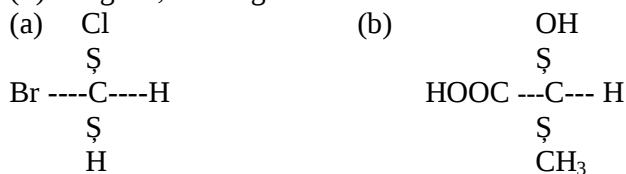
- (b) Give the general mechanism of nucleophilic addition reaction of carbonyl compounds? **07**

OR

Q.5 (a) (i) Assign E,Z notation to each of the following **07**



(ii) Assign R,S configuration to each of the following



(iii) Which of the following compound show geometrical isomerism.

- (a) $\text{CH}_3\text{CH}=\text{CH}_2$
 (b) $\text{CH}_3\text{C}=\text{CCHCH}_3$
 $\begin{array}{c} \text{§} \quad \text{§} \\ \text{Br} \quad \text{Br} \end{array}$



- (b) How is ethane thiol prepared? How does ethane thiol react with, **07**
 (a) CH_3COCl (b) I_2
 (c) CH_3CHO (d) H_2O_2
 (e) $(\text{CH}_3\text{COO})_2\text{Pb}$ (f) NaOH
