GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-III (OLD) - EXAMINATION - SUMMER 2017 Subject Code: 133501 Date: 31/05/2017 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. (a) Write a note on: Q.1 a. Cannizzaro reaction 03 Hoffman reaction 04 b. (b) How does CH=CH react with the following reagents? 07 a. H_2/Pd b. H₂/Pd/BaSO₄ c. HBr d. Cu₂Cl₂/NH₄OH e. Na/liq NH₃ f. AgNO₃/NH₄OH g. HCN/Ba(CN)₂ What is Nucleophilic substitution reaction? Explain SN^1 and SN^2 07 **Q.2** (a) reaction in detail. (b) Explain; 04 a. Stability of Carbocation. 03 b.Why benzyl carboniumion is more stable than ethyl carboniumion.

OR

(b) 1. A hydrocarbon (A) decolorizes dilute KMNO₄ solution. (A) react 02 with 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)?

2. Give the mechanism of electrophilic addition reaction.

05

- Q.3 (a) 1. Draw structure corresponding to the following IUPAC names; 03
 a. 2-methyl-1,5-hexadiene
 b. 6-Cyano-3-oxo-4-heptenal
 - c. 1,5-heptadiyne



- b. CH₂=CHCH₂CH₂CONH₂
- c. CH₃CH₂COCH₂CHO
- d. CH₃CH₂COCH₂CH₂COOCH₃
- (b) Write a note on : Aldol and Cross aldol reaction with mechanism 07

OR

- **Q.3** (a) How do 1^0 , 2^0 , 3^0 alcohol differ in their behavior towards oxidation? 07
 - (b) Compare the properties of formic acid and acetic acid. 07

Q.4	(a)	How is ethyl mercaptan prepared? How does ethyl mercaptan react	07
		with	

a. NaOH	b. (CH ₃ COO) ₂ Pb	c. I ₂
d. CH3CHO	e. H ₂ O ₂	f. CH ₃ COCl

(b) Write the structural formula and give IUPAC names for all isomeric 07 alcohols of the molecular formula C₄H₁₀O.

OR

- Q.4 (a) 1. How will you distinguish between acetaldehyde and acetone?
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 Q.4 (b) 1. How will you distinguish between acetaldehyde and acetaldehyde?
 - (b) 1. How does diethyl ether react with the following reagents? 04
 - a. O₂/long contact
 - b. Cold Conc. H₂SO₄
 - c. PCl₅

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 KMnO₄, a single carboxylic acid containing three carbon atom is isolated. Give the structure and name of (A).

04

- Q.5 (a) Define the term Geometrical Isomerism. State the necessary conditions 07 for a compound to show Geometrical Isomerism. Illustrate your answer with examples.
 - (b) 1. A compound with formula $C_3H_8O_2$ has two -OH group and is **02** optically active. What is its structure?
 - 2. Explain the term: Electrophile & Nucleophile with suitable example. 05

OR

Q.5	(a)	Which of the following will exhibit optical activity?	07
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- 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. Recemic mixture of lactic acid
- (b) Give one method each for the preparation of a primary, a secondary 07 and a tertiary amine.
