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MATRIC NO.:19/MHS01/309

COLLEGE: Medicine and Health Sciences

DEPARTMENT: Medicine and Surgery LEVEL: 100

Assignment Title: Stereochemistry and Functional Group

Course Title: General Chemistry II

Course Code: CHM 102

Question

1. Name the functional groups present in each of the following molecules

(i) $\text{CH}_2=\text{C}(\text{OH})\text{HCHO}$ (ii) $\text{C}_6\text{H}_5\text{CH}(\text{NH}_2)\text{COCH}_3$ (iii) $\text{CH}_3\text{C}=\text{CHCH}(\text{OH})\text{CHO}$

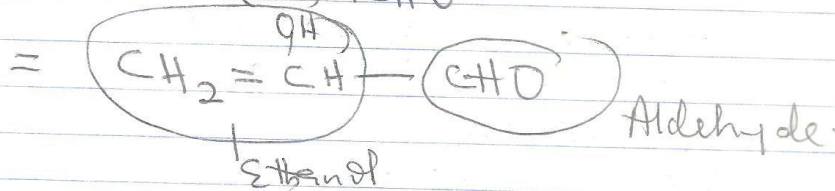
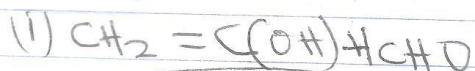
2. A 0.856 g sample of pure (2R, 3R)-tartaric acid was diluted to 10cm³ with water and placed in a 1.0 dm polarimeter tube. the observed rotation at 20⁰ C was +1.0⁰. Calculate the specific rotation of (2R, 3R)-tartaric acid.

3. Draw the possible geometric isomers (where possible) for each of the following compounds:

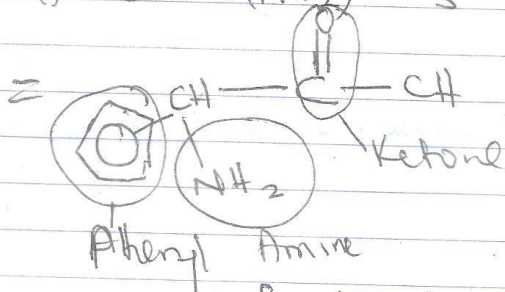
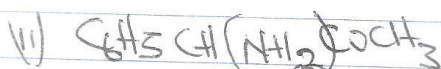
(i) Hexa-2,4-diene (ii) 2,3-Dimethylbut-2-ene

Stereochemistry

Name the functional groups present in each of the following molecules



functional groups are (i) enol (ii) aldehyde

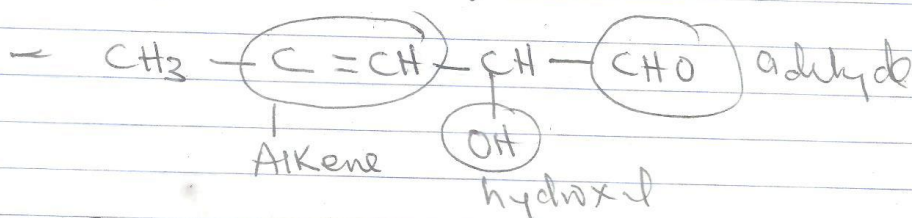
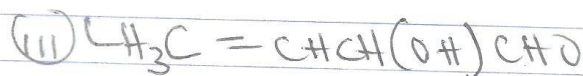


functional groups are

(i) Phenyl

(ii) Amine

(iii) Ketone



functional groups are

(i) Alkene

(ii) hydroxyl

(iii) aldehyde

Ques A 0.856g sample of pure (2R,3R)-tartaric acid was diluted to 10cm³ with water and placed in a 1.0dm polarimeter tube. The observed rotation at 20°C was +1.0 calculate the specific rotation of (2R,3R)-tartaric acid.

Solution
 (2) Mass of pure (2R,3R)-tartaric acid = 0.856g
 Volume of water used = 10cm³ = 10ml
 length of tube = 1.0dm
 Observed rotation = +1.0° at 20°C

∴ The specific rotation
 = (α) $\frac{\text{Observed rotation}}{\text{Concentration } c(\text{mg/ml}) \times \text{length of tube}}$

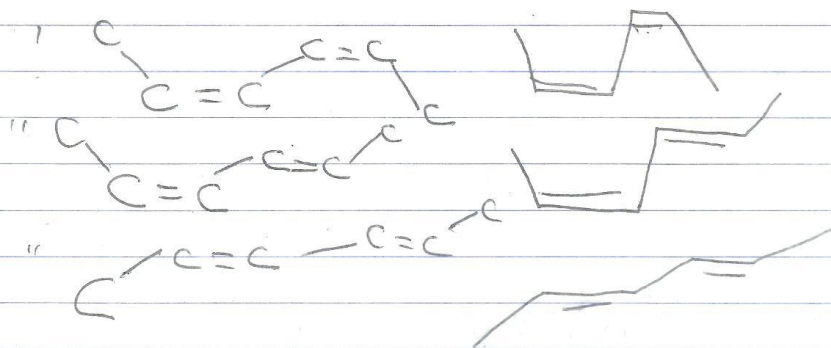
$$[\alpha]_{20}^{\circ} = \frac{+1.0^{\circ}}{\left(\frac{0.856\text{g}}{10}\right) \times 1.0\text{ dm}}$$

$$[\alpha]_{20}^{\circ} = +11.68^{\circ}$$

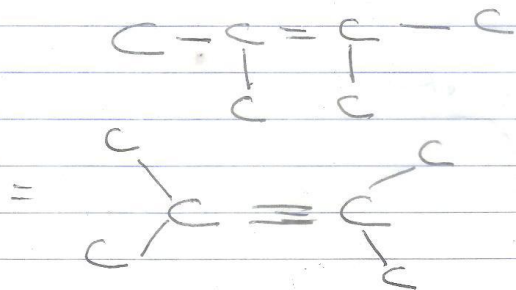
Ques Draw the possible geometric isomers of each of the ff.

i) Hexa-2,4-diene iii) 2,3-Dimethylbut-2-ene

ii) Hexa-2,4-diene - 3 structural isomers



iv) 2,3-Dimethylbut-2-ene

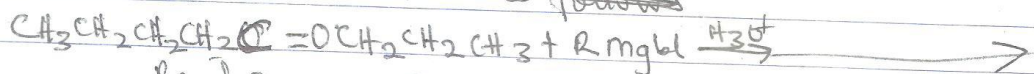


Alkanol

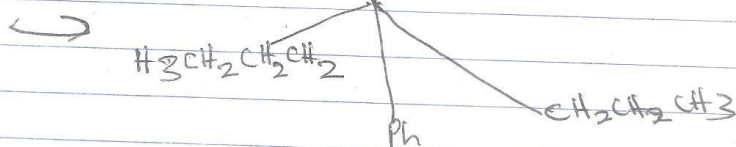
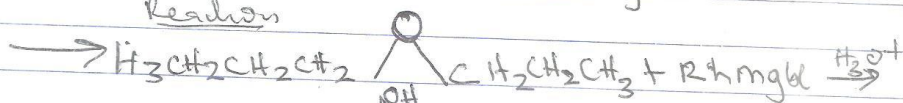
2: Grignard Synthesis of Alkanol

Read a named Grignard Synthesis with $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{C}=\text{OCH}_2\text{CH}_2\text{CH}_3$

~~The reaction is as follows~~



Reaction



Mechanism.

