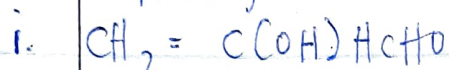


Name: Nwokerie Patrick Chinedu

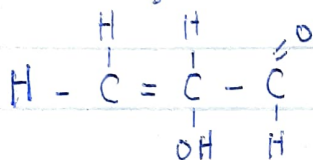
Matric No.: 191 ENIG02/036

Department: Computer Engineering

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



The structural formula



Functional groups present are

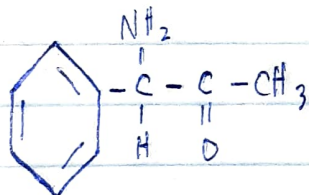
Double chain = (Alkene)

OH = Hydroxyl group

$\text{C} \begin{smallmatrix} \text{=O} \\ | \\ \text{H} \end{smallmatrix}$ = Alkanal



Structure



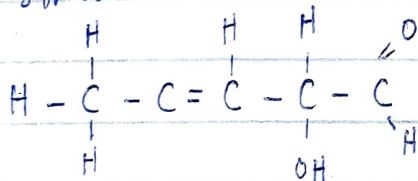
Functional groups: Phenyl group (C_6H_5) with double bonds

- Amines (NH_2)

- Alkanone / ketone ($\text{C} \begin{smallmatrix} \text{=O} \\ | \\ \text{R} \end{smallmatrix}$)



Structure



Functional groups: Alkene ($\text{C}=\text{C}$)

Hydroxyl group (OH)

Alkanal ($\text{C} \begin{smallmatrix} \text{=O} \\ | \\ \text{H} \end{smallmatrix}$)

2. A 0.856g sample of pure (2R,3R) tartaric acid was diluted in 10cm^3 with water and placed in a 1.0dm^3 polarimeter tube, the observed rotation at 20°C was $+10^\circ$, Calculate the specific rotation of (2R,3R) tartaric acid.

Recall, $[\alpha]_D^{25} = \frac{\alpha}{l \times c}$

where

l = length of sample tube

c = Mass (g/dm) or (g/mol)
Volume

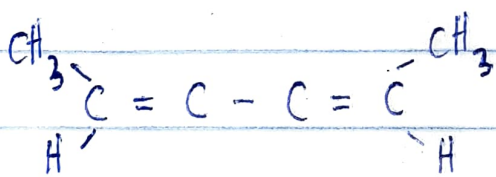
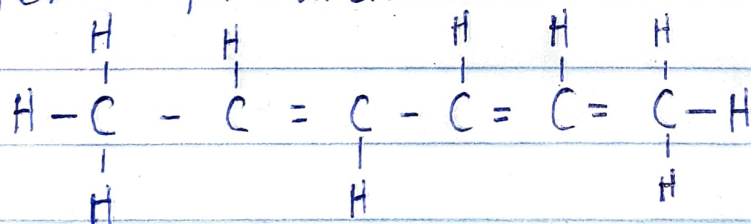
α = Observed rotation

= 1.0

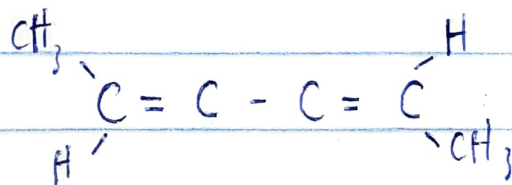
$$1.0 \times \left(\frac{0.856}{10} \right)$$

$$[\alpha]_D^{25} = \frac{1}{0.0856} = 11.68$$

3. Draw the possible geometric isomer (where possible) for
i. Hexa-2,4-diene

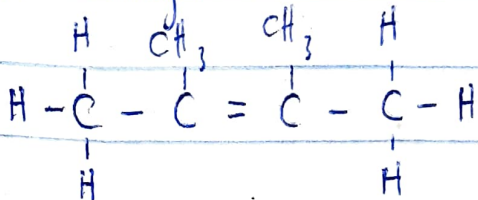


Cis-



trans-

ii. Dimethylbut-2-ene



2,3-dimethylbut-2-ene

$$C = \frac{\text{Mass (g/dm}^3\text{) or (g/mol)}}{\text{Volume}}$$

$$\alpha = \text{Observed rotation}$$

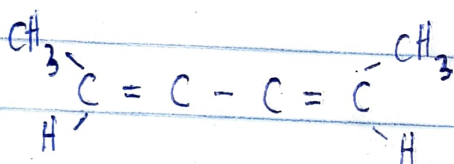
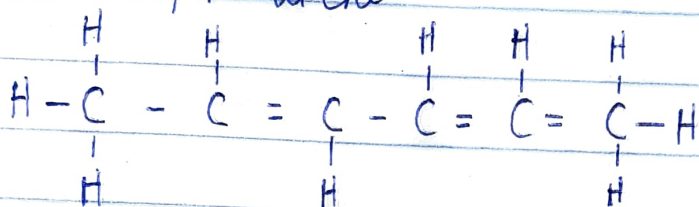
$$= 1.0$$

$$1.0 \times \left(\frac{0.856}{10} \right)$$

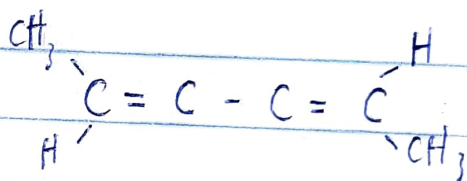
$$[\alpha]_D^{25} = \frac{1}{0.0856} = 11.68$$

3. Draw the possible geometric isomer (where possible) for

i. Hexa-2,4-diene

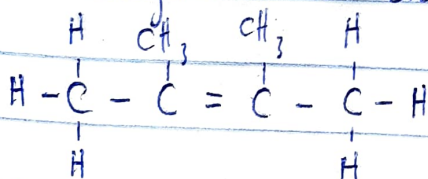


Cis-

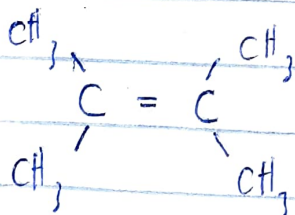


trans-

ii. Dimethyl but-2-ene



2,3-dimethyl but-2-ene



No geometric isomer