STEREOCHEMISTRY AND FUNCTIONAL GROUP

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Course: CHM102.

Assignment.

1) Name the functional groups present in each of the following molecules
i) $CH_2=C(OH)HCHO$ ii) $C_6H_5CH(NH_2)COCH_3$ iii) $CH_3C=CHCH(OH)CHO$

Answer

i) $CH_2=C(OH)HCHO$ — a) $CH_2=C$ (Double bond chain).
b) $-OH$ (Hydroxyl group)
c) $-C(=O)-H$ (alkanal)

ii) $C_6H_5CH(NH_2)COCH_3$
a — C_6H_5 - Phenyl group with double bonds.
b — (- Amine
c — $-C(=O)-R$ - Alkanones

iii) $CH_3C=CHCH(OH)CHO$
a $C=C$ - Alkene (double bond chain)
b) OH - Hydroxyl group.
c) $-C(=O)-H$ - Alkanal

2. A 0.856g sample of pure (2R, 3R) – tartaric acid was diluted to $10cm^3$ 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.

Answer.

$$\alpha_\lambda^T = \frac{\alpha}{c.l}$$

$\alpha = +1.0^\circ$, $c = \frac{0.856g}{10cm^3} = 0.0856g\,cm^{-3}$

$l = 1.0\,dm$

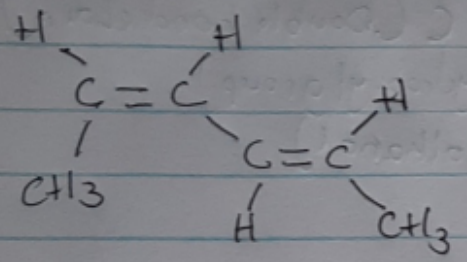
$$\therefore \alpha_\lambda^T = \frac{+1.0}{0.0856 \times 1.0} = 11.68^\circ g^{-1} cm^3 dm^{-1}$$

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.

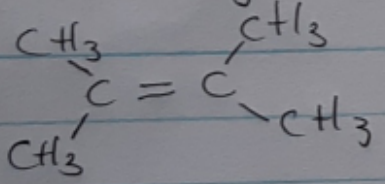
Answer

i) Hexa-2,4-diene



Cis, trans-Hexa-2,4-diene

ii) 2,3-Dimethylbut-2-ene



2,3-Dimethylbut-2-ene (No possible geometric isomers)