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Course: CHM 102
Department: Medicine and Surgery
Matric No: 19/MHS01/343

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) $CH_3O=CHCH(OH)CHO$

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°.
Cal. 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.

Answers

① (i) $CH_2=C(OH)HCHO$:- Aldehyde
(ii) $C_6H_5CH(NH_2)COCH_3$:- Ketone
(iii) $CH_3O=CHCH(OH)CHO$:- Aldehyde

② Specific rotation = $\frac{\text{Observed rotation (degrees)}}{(\text{concentration g/cm}^3) \times \text{path length of sample cell in (dm)}}$

Observed rotation (degrees) = 1.0°

Concentration in $g/cm^3 = \frac{0.856g}{10\ cm^3}$

$= 0.0856g/cm^3$

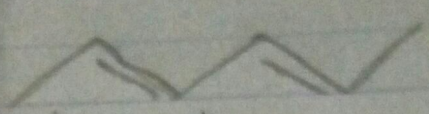
Path length of sample cell in (dm) = 1dm

Specific rotation = $\frac{1.0^\circ}{0.0856g/cm^3 \times 1dm}$

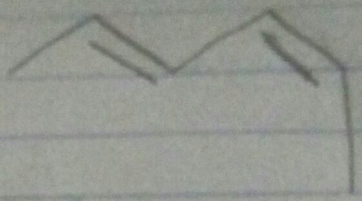
Specific rotation = $11.68^\circ g^{-1} cm^3 dm^{-1}$

∴ the specific rotation of (2R, 3R)-tartaric acid = $11.68^\circ g^{-1} cm^3 dm^{-1}$

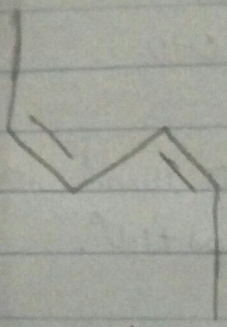
3) Hexa-2,4-diene



(2E,4E)-hexa-2,4-diene



(2E,4Z)-hexa-2,4-diene



(2Z,4Z)-hexa-2,4-diene

(ii) 2,3-Dimethylbut-2-ene