NAME: IBEM BLESSING ONYEKACHI
DEPARTMENT: NURSING
MATRIC NUMBER: 19/MHS02/062
COURSE CODE: CHM 102

QUESTIONS:

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

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 20^0 C was $+1.0^0$. Calculate the specific rotation of (2R, 3R)-tatrtaric 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) (a) Formyl group (Aldehyde) group (CHO)

(b) Hydroxyl group –OH

(c) Alkene Group (Double bond)

(ii) (a) Amino group (-NH_2)

(b) Aromatic group (Phenyl group)

(c) Keto group (Carbonyl group) C=O

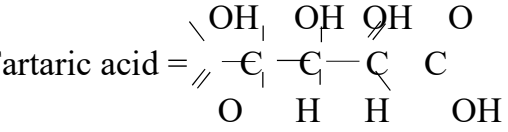
(iii) (a) Aldehyde group

(b) Hydroxyl group

(c) Double bond (Alkene group)

2) Concentration ($moldm^{-3}$) = $\frac{\text{Conc } (g/dm^3)}{\text{Molar mass } (g/mol)}$

$$[\alpha]_\lambda^T = \frac{\alpha}{c.l}$$

Tartaric acid =  = $C_4H_6O_6$

Molar mass = 150g/mol

0.856g — $10cm^3$

xg — $1000cm^3$

$\frac{0.856 \times 1000}{10} = 85.6g/dm^3$

Concentration in g/cm^3 = $\frac{\text{Concentration } (g/dm^3)}{1000}$

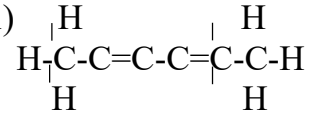
$= \frac{85.6}{1000} = 0.0856g/cm^3$

Using

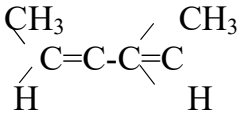
$[\alpha]_\lambda^T = \frac{\alpha}{c.l}$; $\alpha = 41.0^o$, $C = \frac{0.856}{10} = 0.0856g/cm^3$

$= \frac{41.0}{0.0856} = 11.68^o$

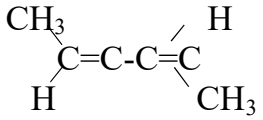
3 (i)



Hexa-2, 4-diene

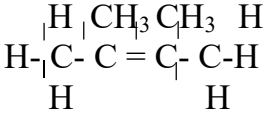


cis-

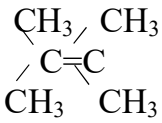


trans-

(ii)



2,3- dimethylbut-2-ene



No geometric isomer.