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**Department:** Dentistry

**Assignment Title:** Stereochemistry and Functional Group  
**Course Title:** General Chemistry II  
**Course Code:** CHM 102

**Matric no. :** 19/MHS09/006

**Question**

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

(i) CH2=C(OH)HCHO (ii) C6H5CH(NH2)COCH3(iii) CH3C=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 200 C was +1.00. 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(i) (a) Formyl group (Aldehyde) group (CHO)

(b) Hydroxyl group –OH

(c) Alkene Group (Double bond)

(ii) (a) Amino group (-NH2)

(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) = Conc (g/dm3)

Molar mass (g/mol)

[α]λT = α

c.l

OH OH OH O

Tartaric acid = C C C C = C4H6O6

O H H OH

Molar mass = 150g/mol

0.856g 10cm3

xg 1000cm3

0.856 x 1000 = 85.6g/dm3

10

Concentration in g/cm3 = Concentration (g/dm3)

1000

= 85.6 = 0.0856g/cm3

1000

Using

[α]λT = α ;α= 41.0o , C = 0.856 = 0.0856g/cm3

c.l 10

= 41.0 = 11.68o

0.0856

3 (i) H H

H-C-C=C-C=C-C-H Hexa-2, 4-diene

H H

CH3 CH3  CH3 H

C=C-C=C C=C-C=C

H H H CH3

cis- trans-

(ii) H CH3 CH3 H

H- C- C = C- C-H 2,3- dimethylbut-2-ene

H H

CH3 CH3

C=C

CH3 CH3

No geometric isomer.