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COURSE: CHEM 102

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

ANSWER

I.CH2=C(OH)HCHO – aldehyde group(-CHO), Hydroxyl group(-OH) and double bond.

II.C6H5CH(NH2)COCH3 – phenyl group, carbonyl group (-C=O) and amine group (NH2).

III.CH3C=CHCH(OH)CHO – hydroxyl group(-OH), aldehyde group(-CHO), and double bound.

2. A 0.856g sample of pure (2R,3R)- tatrtaric acid was diluted to 10cm3 with water and placed in a 1.0dm polarimeter tube, the observed rotation at 20^0 was +1.0^0. Calculate the specific rotation of (2R, 3R) - tatrtaric acid.

ANSWER

0.856g to cm3= 0.856g/10cm3= 0.0856g/cm3.

To find specific rotation= observed rotation (degrees) /(conc.\* path length of sample cells in dm3)

=1.0/(0.0856\*1) = 1.0/0.0856

= 11.68 = 11.7O g-1 cm3 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) Isomers of Hexa-2,4-diene are:

H H

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

H H H H H H

CH3 H

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

H CH3

H H

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

CH3 CH3

(II) 2,3-dimethylbut-2-ene.

This does not have geometric isomers because they are two identical groups attached to the same carbon of the double bond.