Name: Ogieva Glory Uyioghosa.
College: MLHS Department: MBBS
Matric Number: 19/MHS01/290
Course Code: CHEM 102.

Assignment Answers:

(1) Name the functional groups present in each of the following molecules

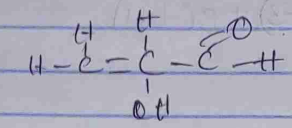
(i) $CH_2=C(OH)HCHO$

(ii) $C_6H_5CH(NH_2)COCH_3$

(iii) $CH_2Cl=CHCH(OH)CHO$

(i) $CH_2=C(OH)HCHO$

Structural formula:

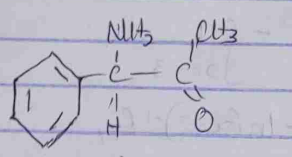


Functional group present are:

- Double bond chain (Alkene)
- OH (Hydroxyl group)
- C^{O}_{H} (Alkanol)

ii $C_6H_5CH(NH_2)COCH_3$

Structural formula:

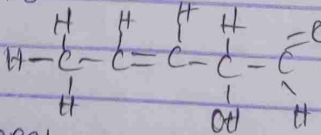


Functional group present are:

- Phenyl group (C_6H_5) with double bonds
- Amine
- Alkanone/Ketone (C^{O}_{R})

iii $CH_2CH=CHCH(OH)CHO$

Structural formula:



Functional group present.

- Alkene ($C=C$)
- Hydroxyl group (OH)
- Alkanol (C^{O}_{H})

(2) A 0.856g sample of pure (2R,3R)-tartaric acid was diluted to 10cm³ 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.

Solution

Recall,

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

where l = length of sample,

c = mass/volume (g/dm) or (g/mol)

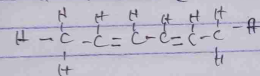
α = observed rotation.

$$S_r = \frac{1.0}{1.0 \times \left(\frac{0.856}{10}\right)} = \frac{1}{0.0856} = 11.68.$$

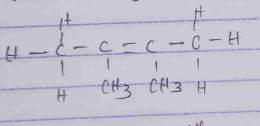
(3) Draw the possible geometric isomers (where possible) for each of the following compounds (i) Hexa-2,4-diene ii) 2,3-Dimethylbut-2-ene

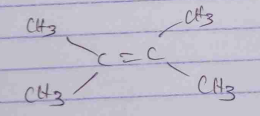
=>

(i) Hexa-2,4-diene.



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





(Neobutene).