

Assignment
Chemistry 102

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Level: 100

Stereochemistry and functional group

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

Solu.

i) $\text{CH}_2 = \text{C}(\text{OH})\text{HCHO}$

Structural formula

$$\begin{array}{c} \text{H} & \text{H} & & \text{O} \\ | & | & & // \\ \text{H}-\text{C} & -\text{C} & -\text{C} & \\ | & & & | \\ \text{OH} & & & \text{H} \end{array}$$

The groups are

- Alkene groups =
- OH (hydroxyl group)
- $\text{C}=\text{O}$ (Alkonal)

ii) $\text{C}_6\text{H}_5\text{CH}(\text{NH}_2)\text{COCH}_3$

Functional groups present are

- Phenyl group (C_6H_5)
- Amine
- Alkonal ($\text{R}\text{C}=\text{O}$)

iii) $\text{CH}_2 = \text{C}(\text{OH})\text{CH}(\text{OH})\text{CHO}$

Structure

$$\begin{array}{c} \text{H} & \text{H} & & \text{O} \\ | & | & & // \\ \text{H}-\text{C} & -\text{C} & -\text{C} & -\text{C}-\text{H} \\ | & & | & \\ \text{H} & & \text{OH} & \end{array}$$

Functional groups present

- Alkene (double bonds)
- Hydroxyl (OH)
- Alkonal ($\text{C}=\text{O}$)

2 A 0.856g sample of pure (2R,3R) tartaric acid was diluted to 100ml with water and placed in a 1.0dm Polarimeter tube. The observation at 20°C was +1.0°. Calculate the specific rotation of (2R,3R) tartaric acid.

Solu.

$$[\alpha]_D^{20} = \frac{\alpha}{l \cdot c}$$

l = length of sample tube, c = mass/volume, θ/dm
 α = Observed rotation

$$\frac{1.0}{1.0 \times (0.856)} = 1.168$$

$$S_w = \frac{1}{0.856} = 1.168$$

$$\therefore 1.168$$

3 Draw possible geometric isomers for each of the following compound

