

CHM 102

1. a) $\text{CH}_2 = \text{C}(\text{OH})\text{HCHO}$

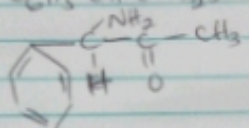
Functional group present:

- Double bond chain (Alkene)
- OH (Hydroxyl group)
- $\text{C}=\text{O}$ (Alkanol)

2) mass of tartaric acid = 0.856g
Vol. of water diluted in = 10cm³

Recall,
Mass conc (c) = $\frac{\text{mass}}{\text{vol}} = \frac{0.856\text{g}}{10\text{cm}^3}$
= 0.0856g/cm³

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



Functional group present:

- phenyl group with double bonds
- Amine (NH₂)
- Alkanone / ketone $\text{C}=\text{O}$

Vol. of polarimeter tube = 1dm³
∴ length of tube = 1dm
Observed rotation (α) = +1.0° at 20°C

Specific rotation [α] = ?
[α] = $\frac{\alpha}{c \times l}$
= $\frac{+1.0^\circ}{0.0856\text{g cm}^{-3} \times 1\text{dm}}$

c) $\text{CH}_3\text{C}=\text{CHCH}(\text{OH})\text{CHO}$

Functional group present:

- Double bond (=)
- $\text{C}=\text{O}$ Alkanol
- OH Hydroxyl group.

[α] = $\frac{+1}{0.0256} = +11.688^\circ$

b) Cc1ccccc1C(N)C(=O)C

Vol. of polymer tube = 1 dm^3
 \therefore length of tube = 1 dm
 Observed rotation (α) = $+1.0^\circ$ at 20°C

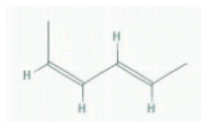
Functional group present:
 - Phenol group with double bonds
 - Amine (NH_2)
 - Alkane/ketone ($\text{C}=\text{O}$)

Specific rotation $[\alpha] = ?$
 $[\alpha] = \frac{\alpha}{c \times l}$
 $= \frac{+1.0^\circ}{0.0256 \text{ g cm}^{-3} \times 1 \text{ dm}}$
 $[\alpha] = +1.16882^\circ$

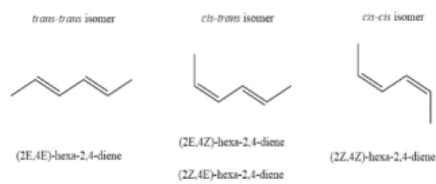
c) CC=CC(O)C=O

Functional group present:
 - Double bond ($=$)
 - $\text{C}=\text{O}$ Alkanol
 - -OH Hydroxyl group.

3. Hexa-2,4-diene - has only 3 isomers



Isomers



B. 2,3 dimethyl but-2-ene. - does not have geometric isomers because there are two identical groups attached to the same carbon of the double bond.

