NAME: ATUME MIMIDOO VICTORIA
MATRICULATION NUMBER: 19/MHS01/107
DEPARTMENT: MEDICINE AND SURGERY
COLLEGE: MEDICINE AND HEALTH SCIENCES
COURSE: CHM 102

ASSIGNMENT:

1. The functional groups present in each of the following molecules include:

(a) $CH_2=C(OH)HCHO$ contains:
(i) Alkene group functional group.
(ii) Hydroxyl functional group. (alk Alcohol)
(iii) Carbonyl functional group.

(b) $C_6H_5CH(NH_2)COCH_3$ contains:
(i) Amine functional group.
(ii) Carbonyl functional group.

(c) $CH_3C=CHCH(OH)CHO$ contains:
(i) Hydroxyl functional group. (Alcohol)
(ii) Alkene functional group.
(iii) Carbonyl functional group.

2. Mass of pure (2R, 3R)-tartaric acid sample - 0.856g
Diluted to $10cm^3$.
Path length of sample cell in dm - 1.0
Observed rotation at 20°C - +1.0°
Specific rotation = ?

Specific rotation = $\frac{\text{observed rotation (degrees)}}{(\text{concentration } g/cm^3) \times (\text{path length of sample cell in dm})}$.

Concentration in gcm^{-3} = $\frac{\text{mass}}{\text{volume in } cm^3} = \frac{0.856g}{10cm^3} = 0.0856g/cm^3$

$$\text{Specific rotation} = \frac{+1.0^\circ}{(0.0856\,g/cm^3)(1\,dm)}$$

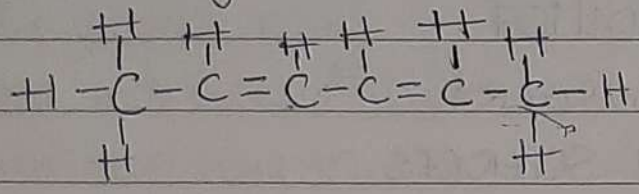
$$\text{Specific rotation} = +11.682^\circ g^{-1} cm^3 dm^{-1}$$

∴ The specific rotation of (2R,3R)-tartaric acid is $+11.682^\circ g^{-1} cm^3 dm^{-1}$

3a Hexa-2,4-diene.

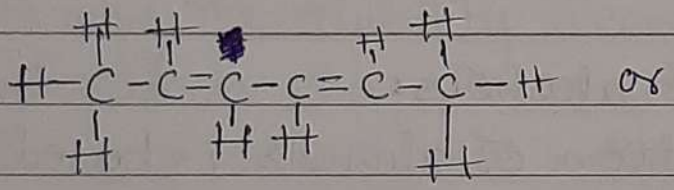
The three (3) possible geometric isomers for the compound above are:

(i)



Cis-Hexa-2,4-diene

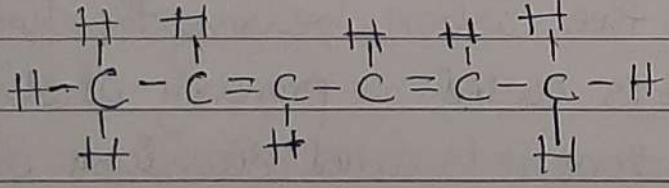
(ii)



or

Trans-Hexa-2,4-diene

(iii)



Hexa-2,4-diene

b 2,3-dimethyl but-2-ene.

There is no geometric isomerism possible in this compound as the same groups are attached to the carbon atoms as seen below.