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DEPARTMENT: MBBS

MATRIC NUMBER: 191MHS021146

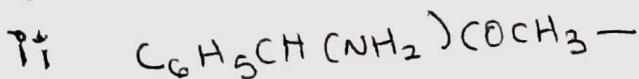
COURSE CODE: CHM 102

DATE: 17<sup>th</sup> MAY 2020

### Assignment on Stereochemistry and Functional Group



- Alkene (=)
- Alkanol (-OH)
- Alkanal (-CHO)



- Ketone (-C=O)
- Amine (-NH<sub>2</sub>)
- Aromatic group (Phenyl)



- Alkene (=)
- Alkanol (-OH)
- Alkanal (-CHO)

2. A 0.856g sample of pure (2R, 3R)-tartaric acid was diluted to 10cm<sup>3</sup> 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

Mass of pure (2R, 3R)-tartaric acid = 0.856g

Volume = 10cm<sup>3</sup>

Path length of sample cell = 1.0dm

Observed rotation = +1.0°

Specific rotation = ?

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

$$\text{Specific rotation} = \frac{\text{Observed rotation}}{(\text{concentration}) \times (\text{path length})}$$

$$\text{Specific rotation} = +1.0^\circ$$

$$0.0856 \text{ g/cm}^3 \times 1.0 \text{ dm}$$

$$\text{Specific rotation} = 1.168 \times 10^{10} \text{ g}^{-1} \text{ cm}^3 \text{ dm}^{-1}$$

$$\text{Specific rotation} = 11.68^\circ \text{ g}^{-1} \text{ cm}^3 \text{ dm}^{-1}$$

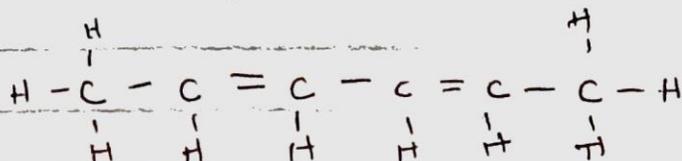
b. Draw the possible geometric isomers (where possible) for each of the following compounds;

i. Hexa-2,4-diene

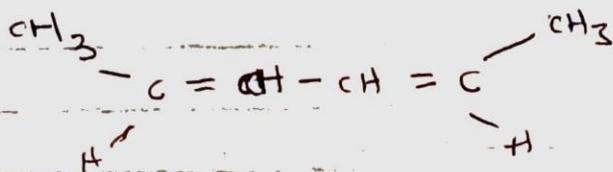
ii. 2,3-Dimethylbut-2-ene

Answer

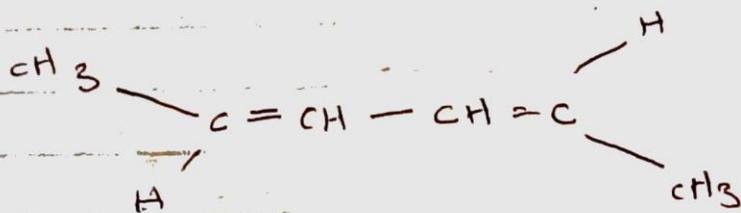
i. Hexa-2,4-diene



Isomers

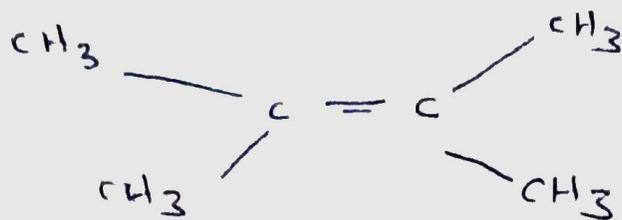
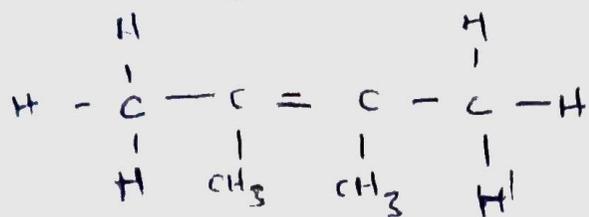


Cis-hexa-2,4-diene



Trans-hexa-2,4-diene.

2, 3-dimethylbut-2-ene



It has no cis-trans isomerism as all substituents are identical.