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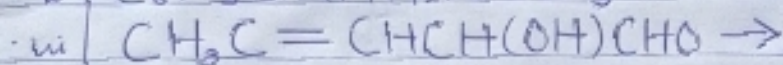
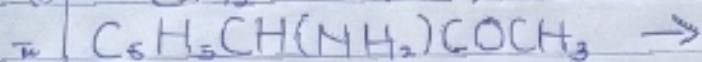
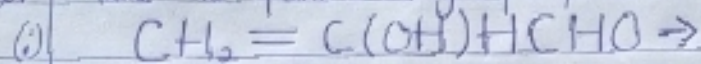
MATRIC NUMBER: 19/MH501/029

Course Title and Code: General Chemistry II (CHM102)

Assignment Title: Stereochemistry and Functional Group

Date: 17-05-2020

Q₁ Name the functional groups present in each of the following molecules



Solution

(i) Functional groups present are: (a) Double bond ($\text{C}=\text{C}$) / Alkene

(b) Hydroxyl group (OH) (c) Aldehydes / Alkanal

(ii) Functional groups present are: (a) Amine ($-\text{NH}_2$) (b) Alkanone / Ketones ($-\text{C}=\text{O}$)

(iii) Functional groups present are: (a) Double bond / Alkene ($\text{C}=\text{C}$)

(b) Hydroxyl group ($-\text{OH}$) and (c) Aldehydes / Alkanal ($-\text{CHO}$)

Q₂ A 0.856g sample of pure (2R,3R)-tartaric acid was diluted to 10 cm³ with H₂O and placed in a 1.0 dm polarimeter tube. The observed rotation at 20°C was +1.0°. Calculate the specific rotation of (2R,3R)-tartaric acid.

Solution

$$\text{The specific rotation } \alpha_d^T = \frac{\alpha}{c \cdot l}$$

$$c = \frac{\text{mass}}{\text{volume}} = \frac{0.856}{10} = 0.0856 \text{ g cm}^{-3}$$

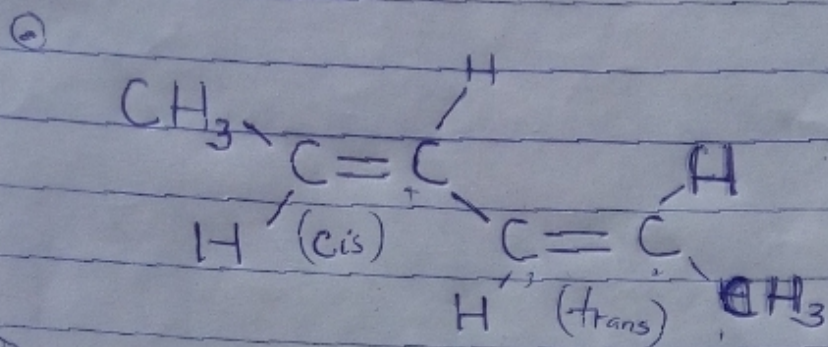
$$\text{The specific rotation} = \frac{1}{0.0856 \times 1} = 11.68^\circ \text{ g}^{-1} \text{ cm}^3 \text{ dm}^{-1}$$

$$\therefore \text{The specific rotation of (2R,3R)-tartaric acid} = \underline{\underline{11.68^\circ \text{ g}^{-1} \text{ cm}^3 \text{ dm}^{-1}}}$$

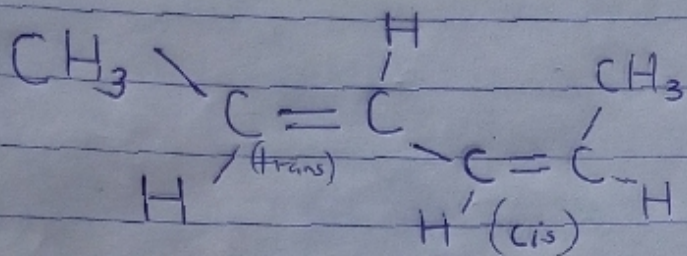
3 Draw the possible geometric isomers (where possible) for each of the following compounds

Solution

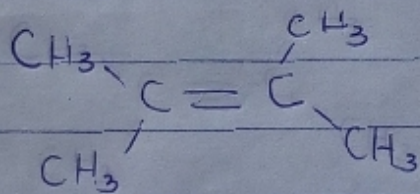
(a) Hexa-2,4-diene



(b)



(2) 2,3-Dimethylbut-2-ene:



It doesn't have geometric isomers because there are two identical groups attached to the ~~carbon~~ same carbon atom of the double bond.