

Essien Blessing Ekeng

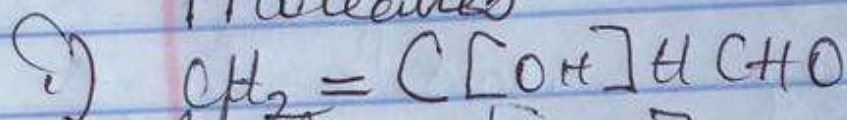
Pharmacy

Chem 102, 19/Mttou/053

note Stereochemistry and functional

group

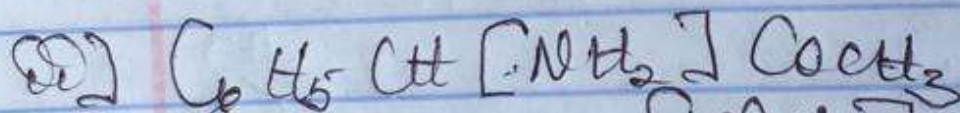
1. Name the functional groups present in each of the following molecules



a. Hydroxyl  $[\text{OH}]$

b. Alkene  $[\text{Double bond chain}]$

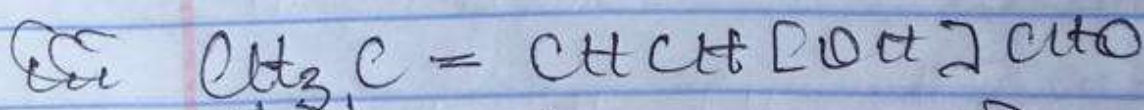
c. Alkane  $[\text{C} - \text{H}]$



a. Amino group  $[\text{NH}_2]$

b. Phenyl group  $[\text{C}_6\text{H}_5]$  and double bonds.

c. Alkane / ketone  $[\text{C} = \text{O} - \text{R}]$



a. Hydroxyl group  $[\text{OH}]$

b. Alkene  $[\text{C} = \text{C}]$

c. Alkane  $[\text{C} - \text{H}]$

2. A 0.856g sample of pure [2R, 3R]-tartaric acid was added to 10 cm<sup>3</sup> of water 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

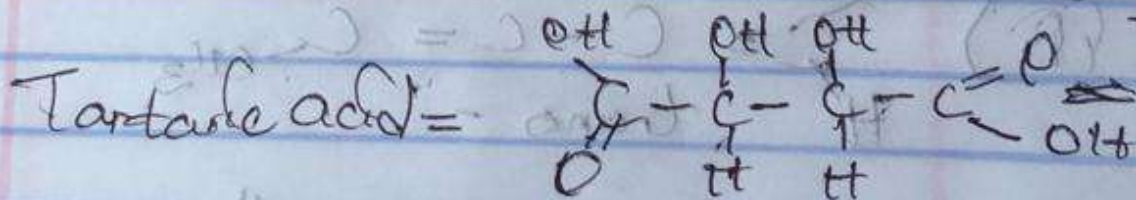
Recall

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

Where  $l$  = Length of sample tube

$\alpha$  = Observed rotation

$$\text{Concentration [mol dm}^{-3}] = \frac{\text{conc [g dm}^{-3}]}{\text{mol mass [g/mol]}}$$



$$[\alpha]_D^{20} = \frac{\alpha}{l \cdot c} \quad \text{Where } \alpha = +1.0$$

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

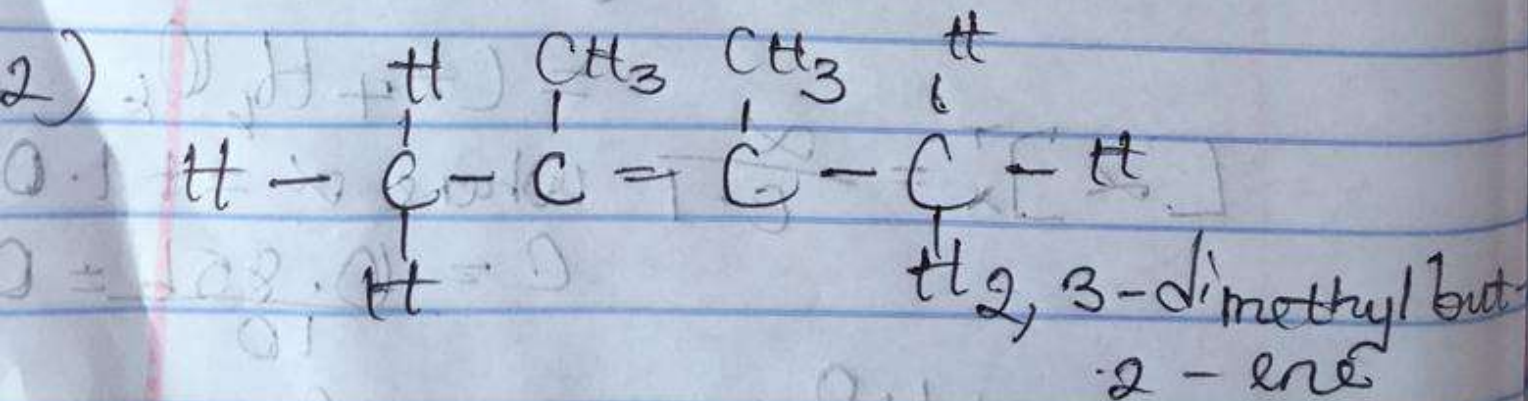
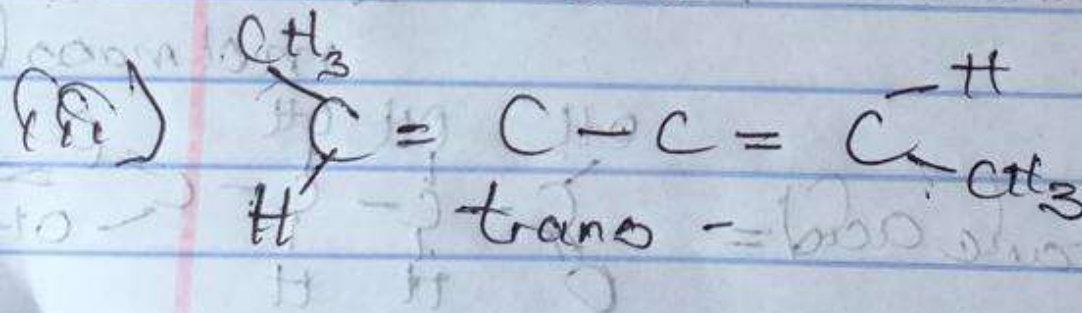
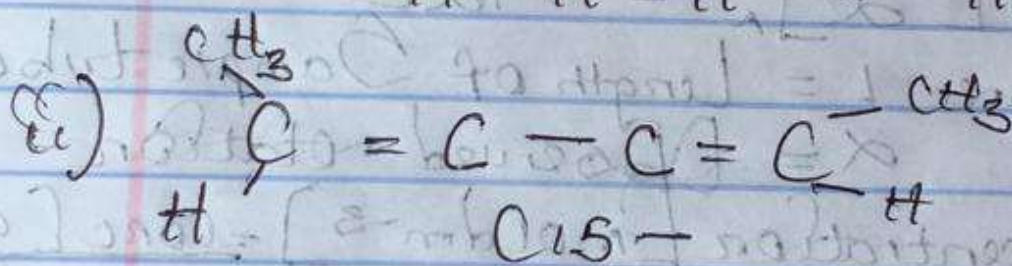
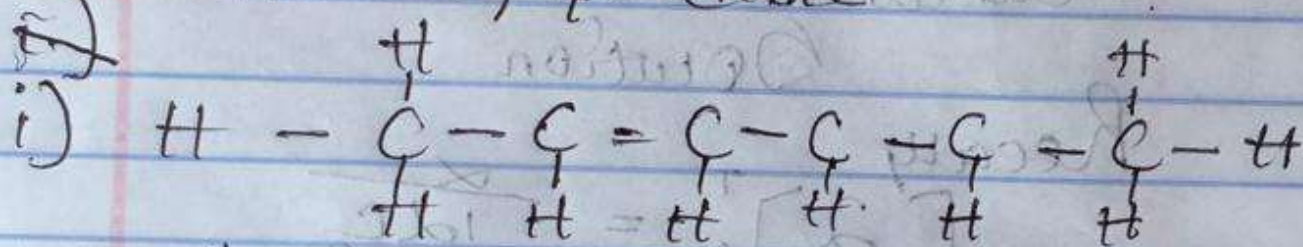
$$[\alpha]_D^{20} = \frac{+1.0}{0.0856} = \underline{\underline{11.68^\circ}}$$

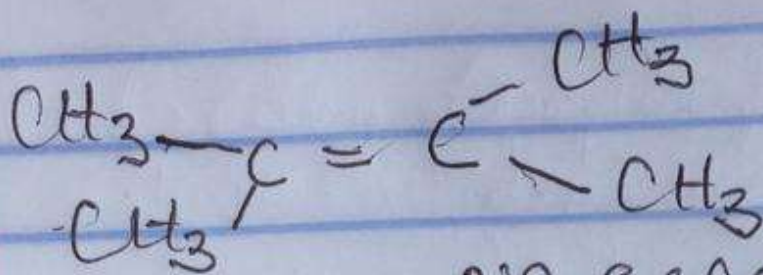
3. Draw the Possible geometric isomers [where possible] for each of the following compounds:

- i) Hex-2,4-diene      ii) 2,3-Dimethylbut-2-ene

Answer

i) Hex-2,4-diene





no geometric isomer  
3