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MATRIC NO: 19/MHS01/306
DEPARTMENT: Medicine and Surgery
Course: Chemistry 102

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

(a) $CH_2 = C(OH)HCHO$

Functional groups present are
- Alkene group (Double bond)
- Hydroxyl group (OH)
- Aldehyde group (CHO)

(b) $C_6H_5CH(NH_2)COCH_3$

Functional groups present are
- Amine group (NH_2)
- phenyl group
- Ketone group

(c) $CH_3C=CHCH(OH)CHO$

Functional groups present are
- Alkene (Double bond)
- Hydroxyl group
- Aldehyde group

2) A 0.856g sample of pure (2R, 3R)-tatraetaric acid was diluted to 10cm³ 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)-tatrtaric acid.

$$\text{Concentration (mol/dm}^3) = \frac{\text{conc. (g/dm}^3)}{\text{molar mass (g/mol)}}$$

$$[\alpha]_A^t = \frac{\alpha}{C.L}$$

molar mass = 150 g/mol

0.856g ⟶ 10cm³

x g ⟶ 1000cm³

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2) $\frac{0.856 \times 1000}{10} = 85.6 g/dm^3$

Concentration in $g/cm^3 = \frac{\text{Concentration } (g/dm^3)}{1000}$

$= \frac{85.6}{1000} = 0.0856 g/cm^3$

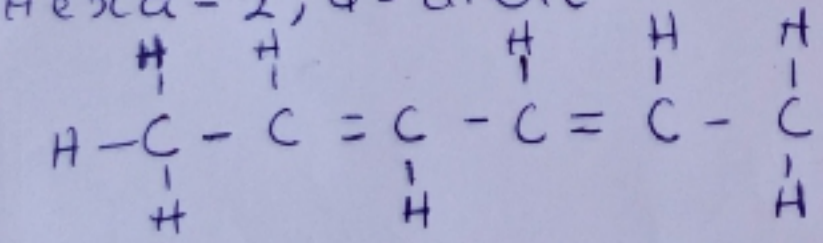
$[\alpha]_A^T = \frac{\alpha}{C \cdot L} = \frac{+1.0}{0.0856 \times 1} = 11.68°$

$[\alpha]_A^T = \frac{\alpha}{C \cdot L}$; $\alpha = +1.0$, $C = \frac{0.856}{10} = 0.0856 g/cm^3$

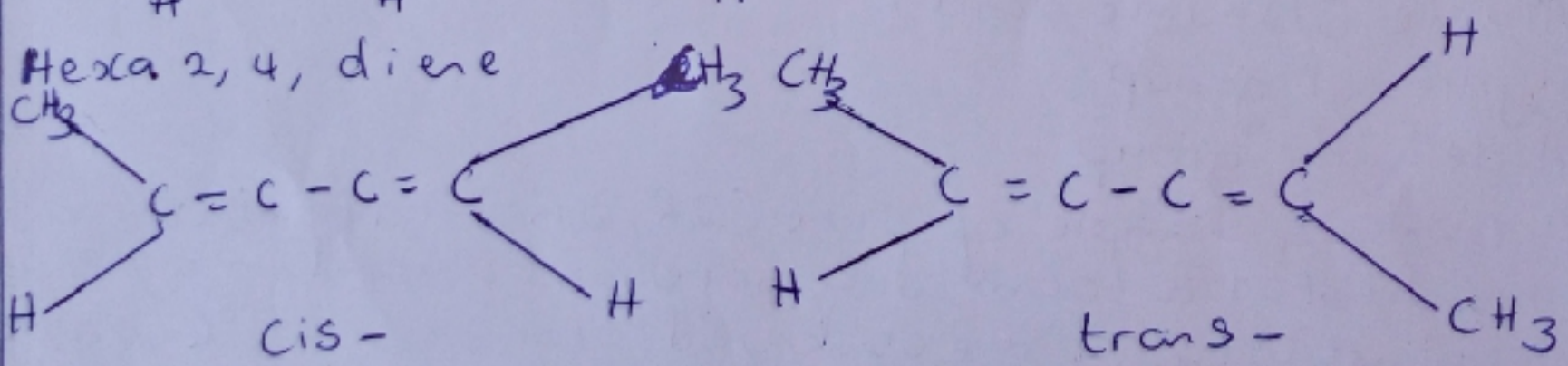
$= \frac{+1.0}{0.0856} = 11.68°$.

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

(a) Hexa-2,4-diene

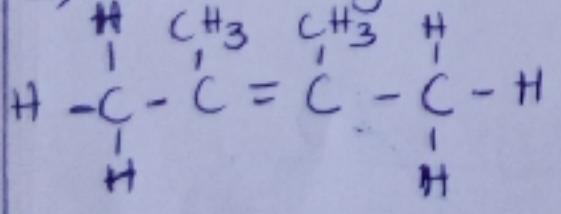


Hexa 2, 4, diene

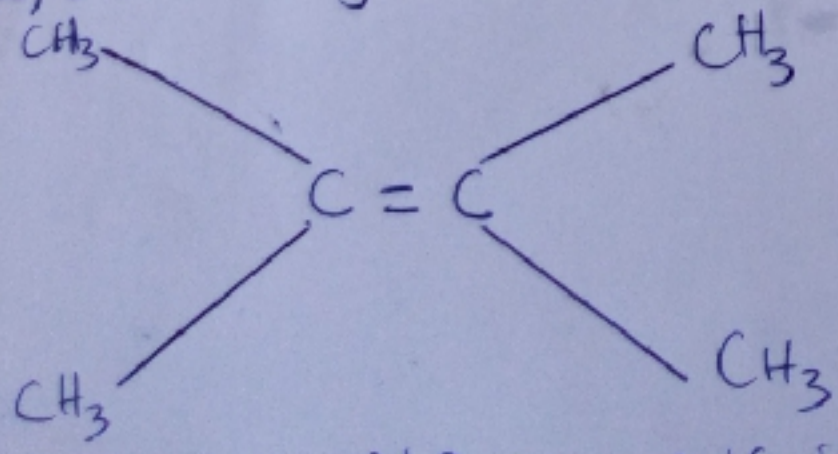


cis- trans-

(b) 2,3 dimethyl but 2-ene



2,3 dimethylbut-2-ene



NO geometric isomer.