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

i) $\text{CH}_2 = \text{C}(\text{OH})\text{HCHO}$ - Aldehydes

ii) $\text{C}_6\text{H}_5\text{CH}(\text{NH}_2)\text{COCH}_3$ - Amines

iii) $\text{CH}_3\text{C} = \text{CHCH}(\text{OH})\text{CHO}$ - Alkene

② A 0.856g sample of pure (2R,3R)-tartaric acid was dissolved in 10 cm³ with 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.

Soln

Given: $g = 0.856\text{g}$, $10\text{cm}^3 = 10\text{ml}$, $[\alpha]_{\text{obs}} = +1.0^\circ$

$$[\alpha]_{\text{lit}} = \frac{[\alpha]_{\text{obs}}}{(l \times c)}$$

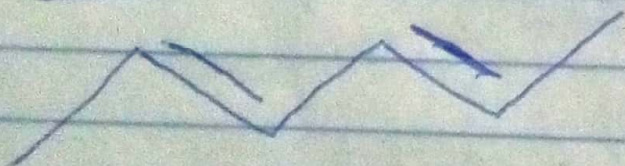
$$c = \frac{0.856}{10} = 0.0856\text{g/ml}$$

$$= \frac{+1.0^\circ}{1 \times 0.0856} = 11^\circ \text{ or } 11\text{R}$$

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

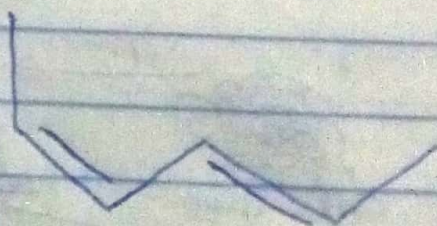
i) Hexa-2,4-diene

trans-



(2E,4E)hexa-2,4-diene

cis-



(2E,4Z)hexa-2,4-diene

③ 2,3-Dimethyl but-2-ene

