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1. (i) Alkanal ( $-\text{COH}$ )

(ii) Amide ( $-\text{CO}-\text{NH}_2$ )

(iii) Alkanal ( $-\text{COH}$ )

Observed rotation

$$2. \quad [\alpha] = \frac{\alpha_{\text{observed}}}{c \times l}$$

Specific rotation      concentration      Path length

$$\text{Concentration} = \frac{0.856}{10}$$

$$c = 0.0856 \text{ g/cm}^3 \text{ or g/ml}$$

$$\text{Path length} = 1.0 \text{ dm}^3$$

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

$$[\alpha] = \frac{1}{0.0856 \times 1}$$
$$= 11.682^\circ //$$

3. i) Hexa-2,4-diene

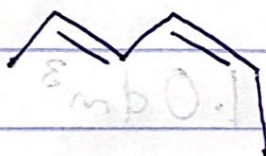
The four possibilities are (E,E), (E,Z), (Z,E) and (Z,Z).

However, (E,Z) and (Z,E) are identical.

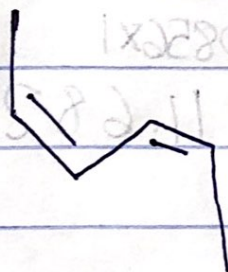
(2E, 4E)



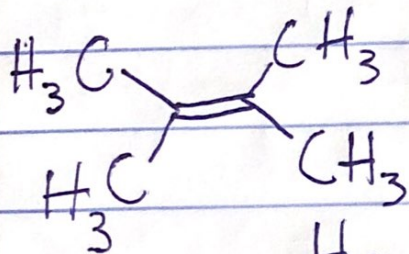
(2E, 4Z)



(2Z, 4Z)



ii) 2,3-Dimethylbut-2-ene



Has no geometric isomers because there are two identical groups attached to the same carbon of the double bond