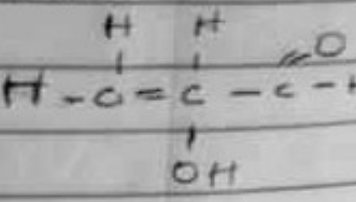
i) $CH_2 = C(OH)\ HCHO$

Structural formula

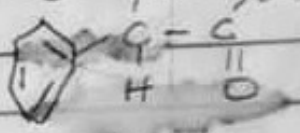


Functional group present are:

- Double bond chain (Alkene)
- OH (hydroxyl group)
- $C(=O)H$ (Alkanol)

ii) $C_6H_5CH(CNH_2)(OCH_3)$

Structural formula:

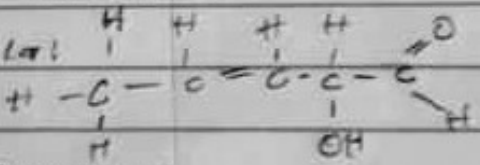


Functional group present are:

- Phenyl group (C_6H_5) non-double bonds
- Amine
- Alkanone/Ketone ($C(=O)R$)

iii) $CH_3CH=CHCH(OH)CHO$

Structural formula:



Functional group present:

- Alkene ($C=C$)
- Hydroxyl group (OH)
- Alkanol ($C(=O)H$)

2) Recall,

$$[\alpha]_\lambda^T = \frac{\alpha}{l \times c}$$

where l = length of sample

$c = \frac{\text{mass}}{\text{volume}}$ (g/dm^3) or (g/mol)

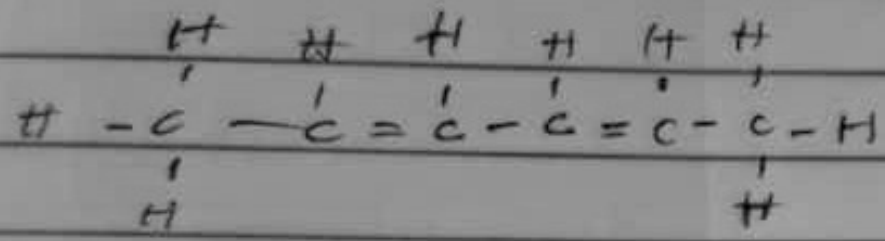
α = observed rotation

Sr. 1-D

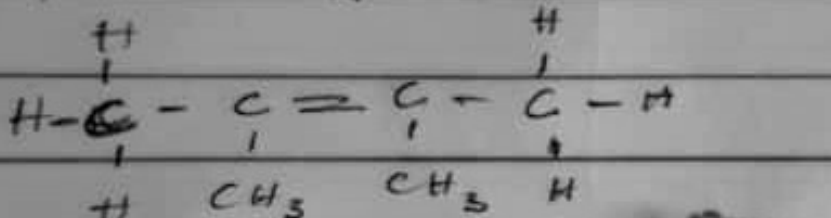
$$1.0 \times \left(\frac{0.856}{10}\right)$$

$$S_r = \frac{1}{0.0856} = 11.68$$

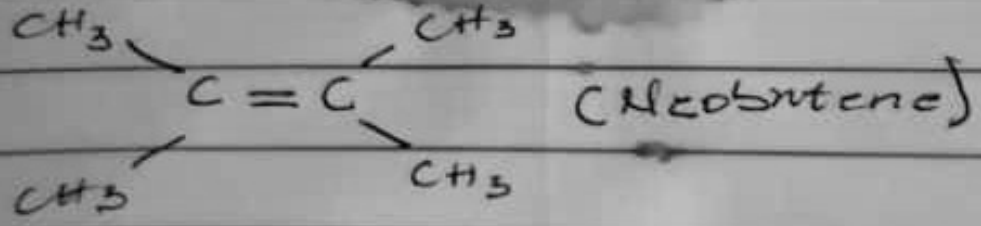
3.) Hexa-2, 4-diene



b) 2, 3-Dimethylbut-2-ene



OR



(Neobutene)