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DEPARTMENT: MECHATRONICS

MATRIC NO: 19/ENG05/042

CHEM 102

1.

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

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

② A 0.856g sample of pure (2R,3R)-tartaric acid was diluted to 10ml 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)-tartaric acid.

Solution

$$\text{Specific rotation } [\alpha]_D = \frac{\alpha}{(c) (l)}$$

Where $\alpha \Rightarrow$ observed rotation (degrees)

$c =$ concentration in g/ml

$l =$ length of sample (dm)

$$\alpha = 1.0^\circ$$

$$c = \frac{\text{mass}}{\text{volume}} = \frac{0.856\text{g}}{0.01} = 85.6\text{g/L}$$

$$= 8.56\text{g/mL}$$

$$\text{Volume of H}_2\text{O} = 10\text{cm}^3 = 0.01\text{liters} = 10\text{ml}$$

$$[\alpha]_D = \frac{1.0^\circ}{8.56\text{g/mL} \times 1.0\text{dm}} = \frac{0.1168^\circ \text{ mL}}{\text{g dm}}$$

$$\Rightarrow 0.1168^\circ \frac{\text{mL}}{\text{g dm}}$$

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

(i) Hexa-2,4-diene

(ii) 2,3-dimethylbut-2-ene



