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 CHEM 102 GENERAL CHEMISTRY II  
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 AERONAUTICAL ENGINEERING  
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1. Name the functional group present in each of the following molecules
- (i)  $\text{CH}_3\text{C}(\text{OH})\text{HCO}_2\text{H} \Rightarrow$  Alkanols / Alcohols
  - (ii)  $\text{C}_6\text{H}_5\text{CH}(\text{NH}_2)\text{COCH}_3 \Rightarrow$  Amines
  - (iii)  $\text{CH}_3\text{C}=\text{CHCH}(\text{OH})\text{CHO} \Rightarrow$  Alkanols / Alcohols

2. A 0.856g sample of pure (2R,3R)-tartaric acid was dissolved in 10cm<sup>3</sup> of water and placed in a 1.0dm<sup>3</sup> polarimeter tube. The observed rotation at 20°C was +1.0°. Calculate the specific rotation of (2R,3R)-tartaric acid.

$$\begin{aligned}
 \text{Specific rotation} &= \frac{\text{Observed rotation (degrees)}}{\text{Concentration (g/cm}^3) \times \text{path length of sample (dm)}} \\
 &= \frac{+1.0^\circ}{0.856 \times 1} \\
 &= +1.66^\circ \text{ g}^{-1} \text{ cm}^3 \text{ dm}^{-1}
 \end{aligned}$$

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

