

Question 34 (Answer: D)

- Alkaline hydrolysis of a nitrile gives the sodium salt of the carboxylic acid, so mixture 3 works.
- NaBH_4 *reduces* propanal to propan-1-ol – no acid is formed.
- Sodium metal with an alcohol gives the alkoxide, sodium propoxide, not the propanoate.

Question 37 (Answer: C)

- Reaction 1 is right: a carboxylic acid with a carbonate gives salt, water and carbon dioxide.
- Reaction 2 is wrong: a metal with an acid gives *hydrogen*, not water.
- Reaction 3 is right: acid plus alcohol gives an ester and water.

Question 33 (Answer: C)

- The molecule has both a primary alcohol group and an aldehyde group.
- Excess acidified dichromate oxidises *both* of them to carboxylic acids.
- The final product is therefore ethanedioic acid, HOOC-COOH .

Question 36 (Answer: C)

- Oxidising propanal gives propanoic acid in a single step.
- Propan-2-ol is a secondary alcohol, so it would give propanone, not an acid.
- Ethanenitrile has only two carbons, and propyl ethanoate hydrolyses to ethanoic acid.

Question 37 (Answer: C)

- Sodium metal reacts with *both* $-\text{OH}$ and $-\text{COOH}$ groups, giving $\frac{1}{2}$ mol H_2 per group.
- A carbonate reacts only with the $-\text{COOH}$, and NaOH gives no gas at all.
- Counting groups: Z gives 1.5 mol, W gives 1.0, X gives 0.5 mol CO_2 and Y gives none – so Z, W, X, Y.