

Question 37 (Answer: D)

- Bacteria oxidise ethanol in the presence of air to ethanoic acid.
- A dilute solution of ethanoic acid is vinegar.
- Sodium ethanoate would need an alkali, and an ester would need an alcohol as well.

Question 35 (Answer: D)

- Name the acid part first – it supplies the "-anoate" ending.
- The alkyl group on the single-bonded oxygen supplies the first word.
- Count the carbons on each side of the -COO- carefully: three in the acyl part and one in the alkyl group.

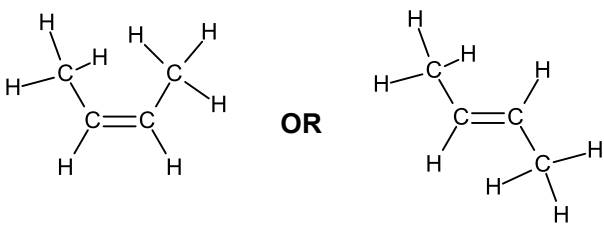
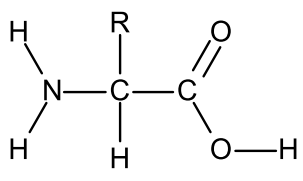
Question 38 (Answer: B)

- Only the $\text{C}=\text{C}$ takes part in addition polymerisation.
- The -COOH group is a spectator and appears unchanged in the repeat unit.
- So the repeat unit is $\text{-CH}_2\text{-CH(COOH)-}$ with single bonds along the backbone.

Question 38 (Answer: D)

- Bacteria *oxidise* ethanol to ethanoic acid, using oxygen from the air.
- Magnesium forms $2+$ ions, so its ethanoate is $(\text{CH}_3\text{COO})_2\text{Mg}$, not CH_3COOMg .
- Ethanoic acid is a weak acid: only a fraction of its molecules dissociate at any moment.

6(a)	correctly circled ester link (including 2 C atoms and 2 O atoms)
6(b)	ethyl butanoate
6(c)	$\text{C}_3\text{H}_6\text{O}$
6(d)(i)	M1 butanoic acid M2 ethanol
6(d)(ii)	acid
6(e)	4
6(f)	$2\text{C}_5\text{H}_{10}\text{O}_2 + 13\text{O}_2 \rightarrow 10\text{CO}_2 + 10\text{H}_2\text{O}$

6(a)	M1 C $50(.00) \div 12$ H $5.56 \div 1$ O $44.44 \div 16$ OR 4.17:5.56:2.78 M2 fractions shown dividing all by smallest OR 1.5:2:1 OR 3:4:2 M3 C₃H₄O₂
6(b)	C ₄ H ₄ O ₄
6(c)(i)	water
6(c)(ii)	acid
6(c)(iii)	M1 propanoic acid M2 butan-1-ol
6(d)(i)	addition
6(d)(ii)	polymers are of indefinite length
6(d)(iii)	3 / three
6(d)(iv)	M1 C = C M2 displayed formula of but-2-ene 
6(e)(i)	 M1 –NH₂ displayed M2 –COOH displayed functional groups can be on either side
6(e)(ii)	one circle around either amide linkage
6(e)(iii)	proteins

Question 14 (Answer: **D**)

- The equation is written with a double arrow, so it proceeds in both directions.
- The ester and water can react back to give the acid and the alcohol.
- Esterification is a reversible condensation – not an addition or a reduction.

Question 36 (Answer: **D**)

- Releasing carbon dioxide from a carbonate proves J is an acid.
- A pH of 3 means it is a *weak* acid, not a strong one.
- A water-soluble liquid weak acid is a carboxylic acid, such as ethanoic acid.

Question 33 (Answer: **C**)

- The acid supplies the acyl part and the alcohol supplies the rest, with water lost between them.
- Ethanoic acid gives $\text{CH}_3\text{CO}-$ and methanol gives $-\text{OCH}_3$.
- So the ester is methyl ethanoate, $\text{CH}_3\text{COOCH}_3$, with three carbons in total.