

Question 35 (Answer: **A**)

- Alkaline hydrolysis of an ester gives the sodium *salt* of the acid plus the alcohol.
- The acyl part here is $\text{CH}_3\text{CO}-$, so the salt is sodium ethanoate.
- The alcohol formed is propan-1-ol, which is neutral – not an alkoxide.

Question 36 (Answer: **C**)

- In an ester the acyl part (before the O) comes from the acid and the part after the O comes from the alcohol.
- $\text{CH}_3\text{CH}_2\text{CO}-$ comes from propanoic acid.
- $-\text{OCH}_2\text{CH}_3$ comes from ethanol.

3(a)(i)	2 * = 1 mark (round down). Max 5 marks.		
		<i>observations</i>	
		FA 4	FA 5
1 + NaOH(aq)		red-brown / brown ppt AND insoluble in excess *	white ppt * soluble in excess *
2 + NH ₃ (aq)		red-brown / brown ppt AND insoluble in excess *	white ppt AND insoluble in excess *
3 + Na ₂ CO ₃ (aq)		fizzing * gas gives white ppt with limewater * red-brown ppt *	white ppt * fizzing * gas gives white ppt with limewater (award if not awarded for FA 4)
4 + BaCl ₂ (aq) / Ba(NO ₃) ₂ (aq)		white ppt AND	white ppt *
5 + H ⁺ / KMnO ₄ (aq)		stays purple / no change AND	stays purple / no change *

3(a)(ii)	<table><tr><td><i>ions</i></td><td>FA 4</td><td>FA 5</td></tr><tr><td>cations</td><td>Fe³⁺; H⁺</td><td>Al³⁺</td></tr><tr><td>anions</td><td>SO₄²⁻</td><td>SO₄²⁻</td></tr></table>	<i>ions</i>	FA 4	FA 5	cations	Fe ³⁺ ; H ⁺	Al ³⁺	anions	SO ₄ ²⁻	SO ₄ ²⁻								
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	cations	Fe ³⁺ ; H ⁺	Al ³⁺															
	anions	SO ₄ ²⁻	SO ₄ ²⁻															
5 ions correct = 3 marks 3 or 4 ions correct = 2 marks 2 ions correct = 1 mark																		
3(b)(i)	2 * = 1 mark (round down)																	
	<table><tr><th rowspan="2"><i>test</i></th><th colspan="2"><i>observations</i></th></tr><tr><th>FA 6</th><th>FA 7</th></tr><tr><td>1 + H⁺/KMnO₄(aq)</td><td>(turns paler pink)</td><td>(purple fades slightly)</td></tr><tr><td>and warm</td><td>decolourises / turns colourless / turns (pale) yellow *</td><td>decolourises / turns colourless / turns (pale) yellow *</td></tr><tr><td>2 + I₂(aq) + NaOH (and warm)</td><td>no change *</td><td>ppt * that is (pale) yellow *</td></tr><tr><td>3 + Na₂CO₃(aq)</td><td>fizzing *</td><td>no change *</td></tr></table>	<i>test</i>	<i>observations</i>		FA 6	FA 7	1 + H ⁺ /KMnO ₄ (aq)	(turns paler pink)	(purple fades slightly)	and warm	decolourises / turns colourless / turns (pale) yellow *	decolourises / turns colourless / turns (pale) yellow *	2 + I ₂ (aq) + NaOH (and warm)	no change *	ppt * that is (pale) yellow *	3 + Na ₂ CO ₃ (aq)	fizzing *	no change *
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3(b)(ii)	M1 (FA 6 is) methanoic acid because it produces CO₂ / reacts with sodium carbonate AND it can be oxidised / it reacts with KMnO₄ M2 (FA 7 is) propan-2-ol as it gives a ppt in test 2 OR gives a positive tri-iodomethane/iodoform test OR has the -CH(OH)CH₃ group
3(c)	Correct equation CH₃CH₂COOH + CH₃CH₂OH → CH₃CH₂COOCH₂CH₃ + H₂O OR C₂H₅COOH + C₂H₅OH → C₂H₅COOC₂H₅ + H₂O