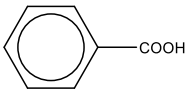
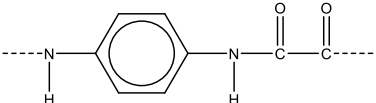
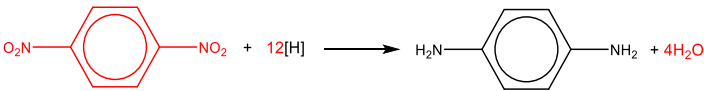
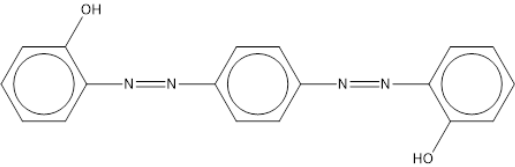
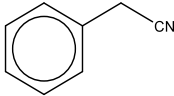
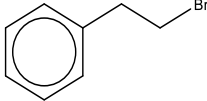
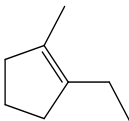


7(a)	M1: ClCH_2COOH BrCH_2COOH CH_3COOH $\text{CH}_3\text{CH}_2\text{OH}$ most acidic least acidic M2: electron withdrawing groups / electronegative groups / negative inductive effect AND weakens O–H bond / more stable anion OR electron donating groups / positive inductive effect AND strengthens O–H bond / less stable anion M3 M4: - chlorine is more electron-withdrawing / electronegative than bromine (related to XCH_2COOH) - electron withdrawing of $\text{C}=\text{O}$ / negative inductive effect of $\text{C}=\text{O}$ (related to COOH) - positive inductive effect / electron donating of alkyl / ethyl / R group (related to ROH) any two [1], all three [2]
7(b)	M1:  M2: CO_2
7(c)(i)	 M1: correct displayed amide bond with $\text{C}=\text{O}$, $(\text{C}_6\text{H}_5)\text{-N}$ and $(\text{C-})\text{C}=\text{O}$ M2: rest of the structure correct with continuation bonds
7(c)(ii)	
7(d)(i)	M1: $\text{Cl}^- \text{N} \equiv \text{N}^+ - \text{C}_6\text{H}_4 - \text{N}^+ \equiv \text{N} \text{Cl}^-$ M2: 

7(d)(ii)	HNO_2 (and HCl) AND $\leq 10^\circ\text{C}$ OR NaNO_2 AND HCl AND $\leq 10^\circ\text{C}$
9(a)	M1: (basicity linked to) ability of lone pair / p-orbital to AND accept / coordinate with a proton / H^+ M2: (lone pair of) electrons on N is delocalised into $\text{C}=\text{O}$ group (and make amides neutral)

9(b)(i)	M1: M  M2: N 
9(b)(ii)	LiAlH_4
9(c)	ketone / carbonyl AND secondary / 2°
9(d)(i)	 curly arrow 1: from O lone pair to C atom (in $\text{C}=\text{C}$) curly arrow 2: from $\text{C}=\text{C}$ bond to the right-hand O atom in $\text{O}=\text{O}$ curly arrow 3: from $\text{O}=\text{O}$ bond to O^+

9(d)(ii)	
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