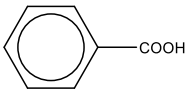
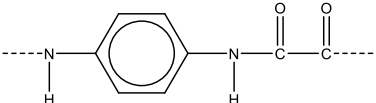
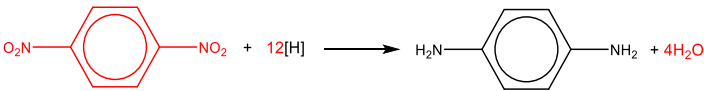
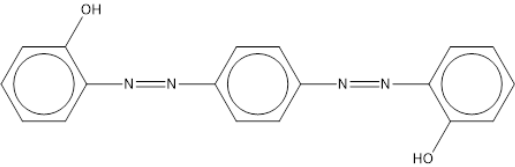
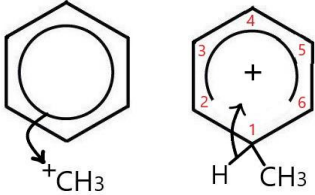


7(a)	M1: ClCH_2COOH BrCH_2COOH CH_3COOH $\text{CH}_3\text{CH}_2\text{OH}$ most acidic least acidic M2: electron withdrawing groups / electronegative groups / negative inductive effect AND weakens O–H bond / more stable anion OR electron donating groups / positive inductive effect AND strengthens O–H 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: $\text{Cl}^- \text{N} \equiv \text{N}^+ \text{--} \text{C}_6\text{H}_4 \text{--} \text{N}^+ \equiv \text{N} \text{Cl}^-$ M2: 

9(a)	- all C atoms are sp^2 hybridised - bonds between C atoms are σ and π C--C σ bonds are formed by overlap of sp^2 hybrid orbitals C--C π bonds are formed by overlap of p orbitals - bonds between C and H atoms are σ C--H bonds are formed by overlap of sp^2 hybrid orbitals and s orbitals Any two [1], any four [2], all six [3]
9(b)	CH_3Cl and AlCl_3
9(c)	 M1: curly arrow from within hexagon towards ^+C M2: intermediate, usual rules for horseshoe and + charge M3: curly arrow from C--H bond into ring AND H^+ product
9(d)	M1: HNO_3 AND H_2SO_4 M2: concentrated AND $25^\circ\text{C} \leq T \leq 60^\circ\text{C}$
9(e)	alkaline KMnO_4
9(f)	4-nitrobenzoic acid
9(g)	(hot) concentrated HCl and Sn
9(h)	M1: perform step 3 before step 2 OR perform step 2 before step 1 M2: COOH is 3-directing OR NO_2 is 3-directing

7(d)(ii)	HNO_2 (and HCl) AND $\leq 10^\circ\text{C}$ OR NaNO_2 AND HCl AND $\leq 10^\circ\text{C}$
----------	--