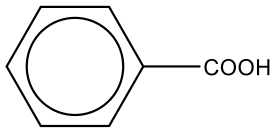
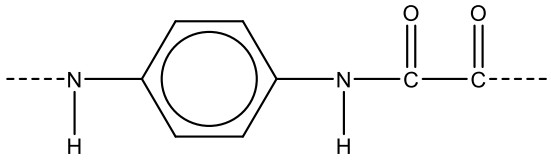
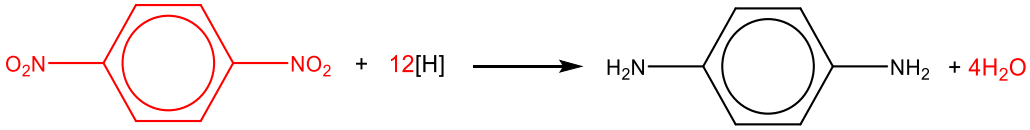
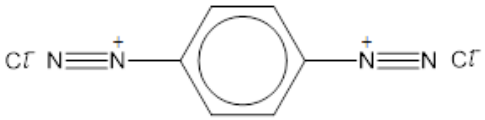
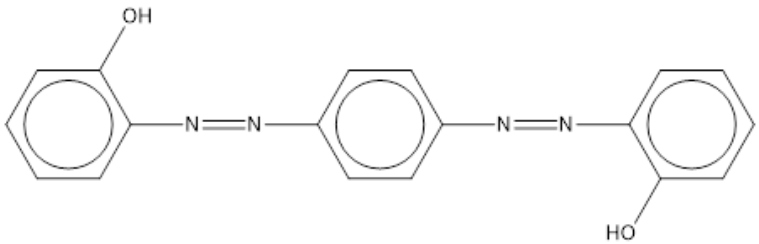
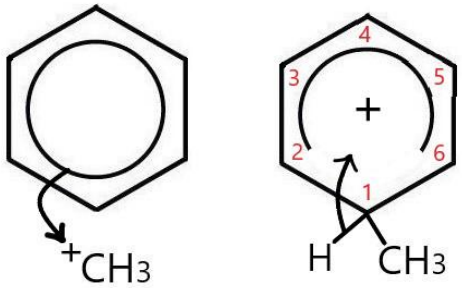
7(a)	**M1:** $ClCH_2COOH$ $BrCH_2COOH$ CH_3COOH CH_3CH_2OH most acidic least acidic **M2:** electron withdrawing groups / electronegative groups / negative inductive effect **AND** weakens O–H bond / more stable anion **OR** electron donating groups / positive inductive effect **AND** strengthens O-H bond / less stable anion **M3 M4:** • chlorine is more electron-withdrawing / electronegative than bromine (related to XCH_2COOH) • electron withdrawing of C=O / negative inductive effect of C=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 C=O, (C_6H_5)–N and (C–)C=O **M2**: rest of the structure correct with continuation bonds
7(c)(ii)	
7(d)(i)	**M1:**  **M2:** 

7(d)(ii)	HNO_2 (and HCl) **AND** ⩽10 °C **OR** $NaNO_2$ **AND** HCl **AND** ⩽10 °C

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 °C ⩽ T ⩽ 60 °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