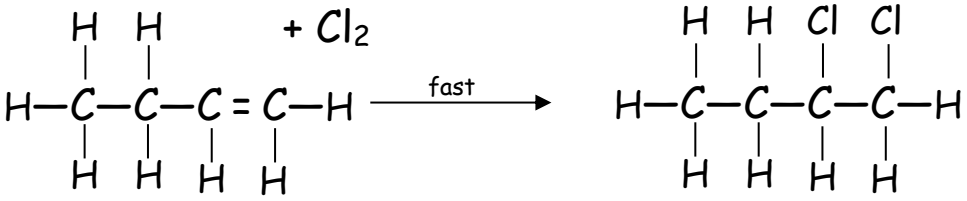
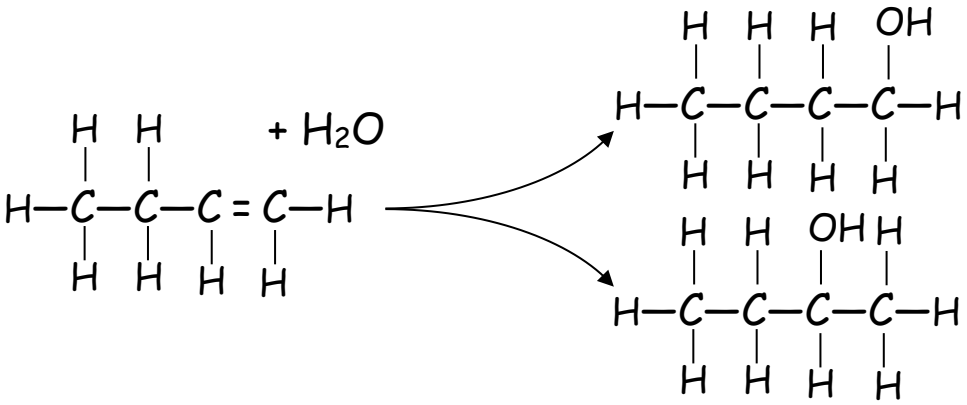
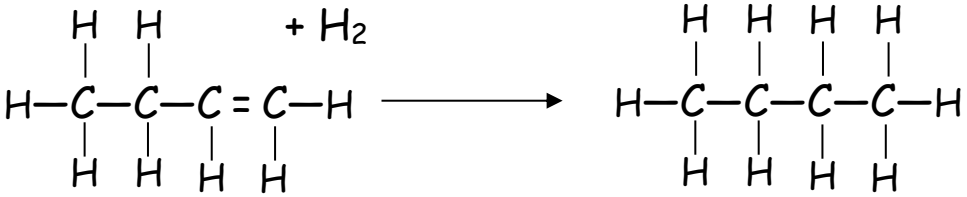
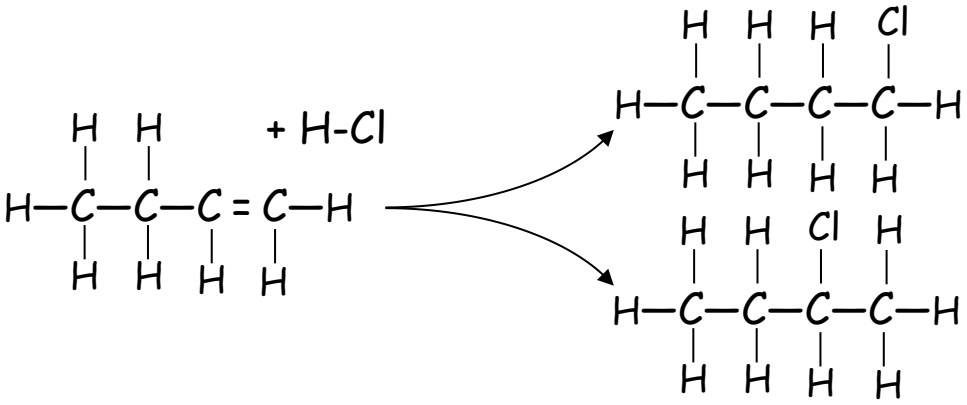
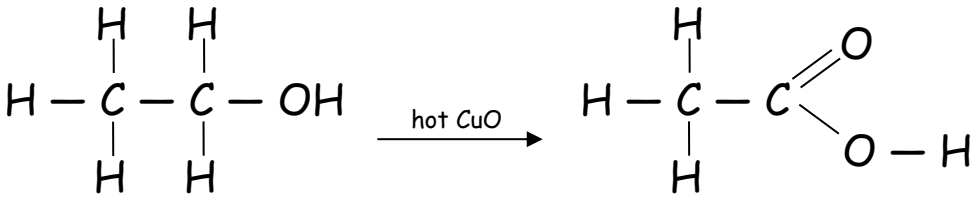
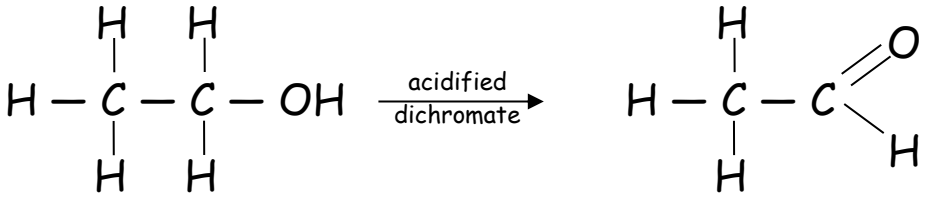
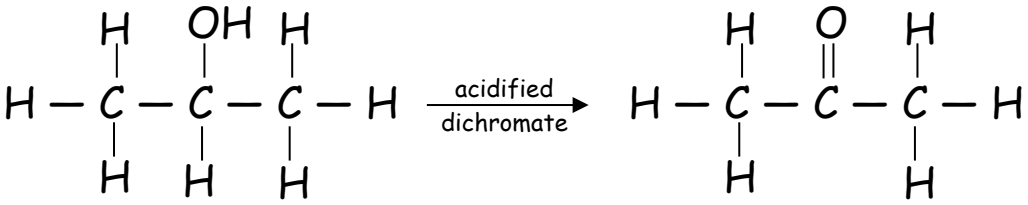
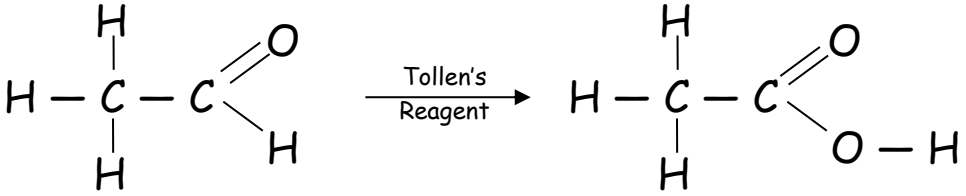
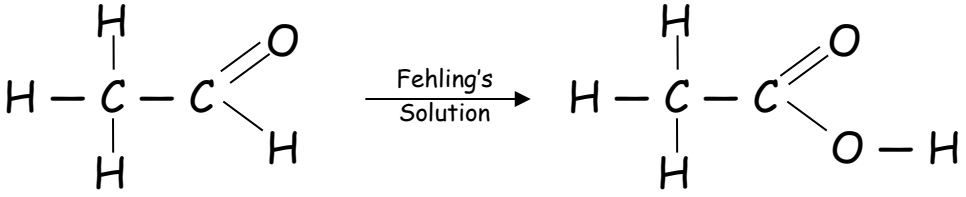
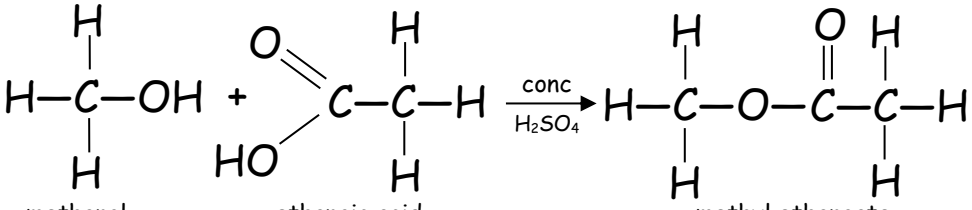
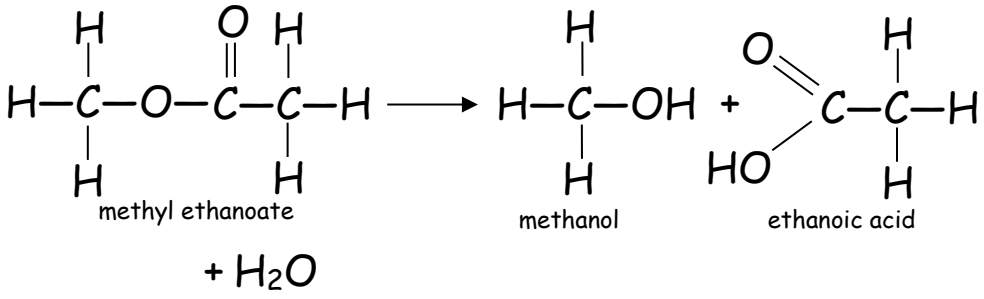
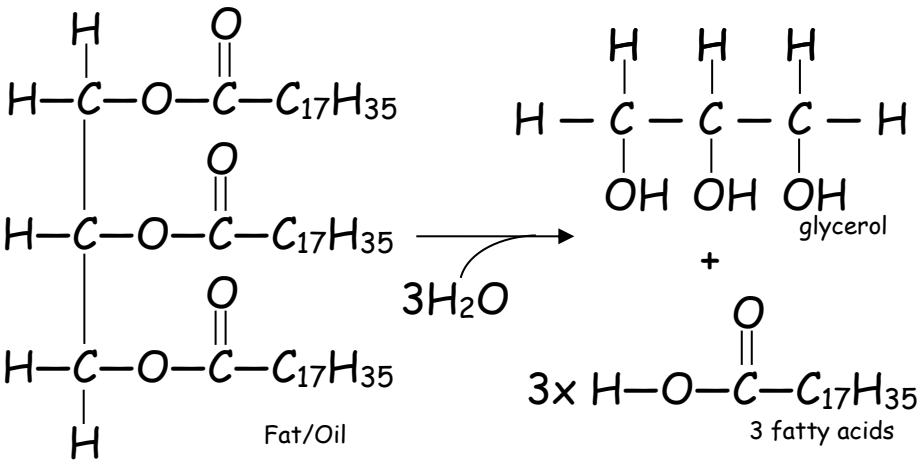
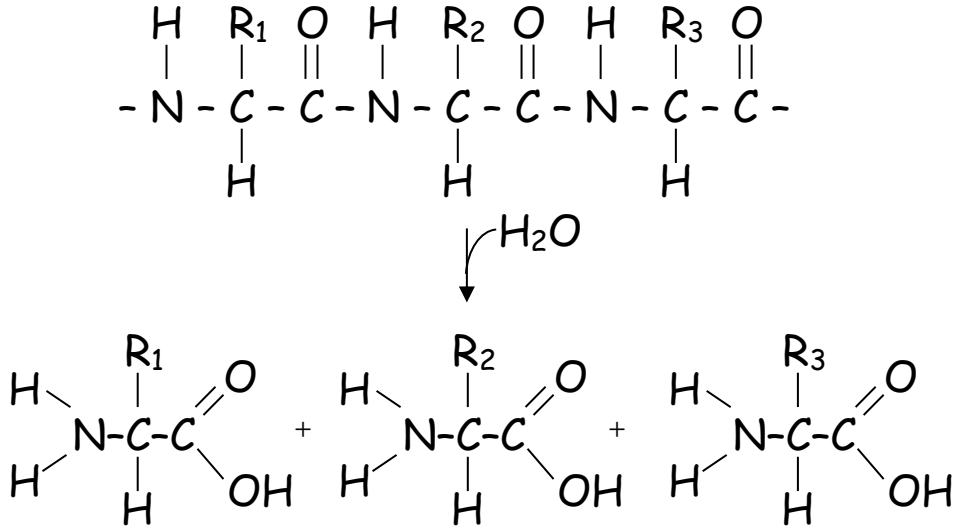
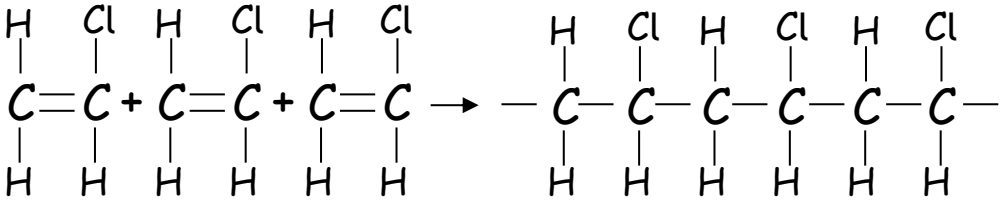
No	Type	Description	
1	Addition I Halogenation	Halogens add across a C=C double bond e.g. F_2, Cl_2. Br_2, I_2 	
2	Addition II Hydration	Water adds across a C=C double bond. Two products are possible. 	
3	Addition III Hydrogenation	Hydrogen adds across a C=C double bond 	
4	Addition IV Hydrogen Halides	Hydrogen Halides (HF, HCl, HBr, HI) add across a C=C double bond 	
5	Enthalpy of Combustion	The energy change for the *complete* combustion of **1 mole** of a substance: $C_3H_7OH(l) + 4\frac{1}{2}O_2(g) \longrightarrow 3CO_2(g) + 4H_2O(l)$	
6	Oxidation I	Primary Alcohol ⟶ Carboxylic Acid  NB: Aldehyde is produced in this reaction but is quickly turned into carboxylic acid	

7	Oxidation II	Primary Alcohol → Aldehyde  acidified dichromate orange colour change green	
8	Oxidation III	Secondary Alcohol → Ketone  acidified dichromate orange colour change green	
9	Oxidation IVa	Aldehyde → Carboxylic Acid  Tollen's Reagent colour change silver mirror produced	
10	Oxidation IVb	Aldehyde → Carboxylic Acid  Fehling's Solution blue colour change brick red	
11	Condensation (Esterification)	 methanol + ethanoic acid (conc H_2SO_4) → methyl ethanoate + H_2O	

12	Hydrolysis I Esters		
13	Hydrolysis II Fats → Fatty Acids		
14	Hydrolysis III Protein → Amino Acids		
15	Addition Polymerisation		
16	Reduction	$MnO_4^- + 8H^+ + 5e^- \longrightarrow Mn^{2+} + 4H_2O$ NB Electrons always *before* arrow in Reduction	
17	Oxidation	$Fe^{2+} \longrightarrow Fe^{3+} + e^-$ NB Electrons always *after* arrow in Oxidation	
18	Redox	$MnO_4^- + 8H^+ + 5Fe^{2+} \longrightarrow 5Fe^{3+} + Mn^{2+} + 4H_2O$ NB No Electrons appear in a Redox Equation	

19	Haber Process	Nitrogen + Hydrogen $\xrightarrow{\text{iron catalyst}}$ Ammonia	
20	Ostwald Process	Ammonia + Oxygen $\xrightarrow[\text{catalyst}]{\text{platinum}}$ Nitrogen Monoxide + Water Nitrogen Monoxide dissolves in Water to make Nitric Acid	
21	Neutralisation I Acid + Metal Oxide	ACID + Metal Oxide $\longrightarrow$ SALT + WATER sulphuric acid + sodium oxide $\longrightarrow$ sodium sulphate + water	
22	Neutralisation II Acid + Metal Hydroxide	ACID + Metal Hydroxide $\longrightarrow$ SALT + WATER hydrochloric acid + sodium hydroxide $\longrightarrow$ sodium chloride + water	
23	Neutralisation III Acid + Metal Carbonate	ACID + Metal Carbonate $\longrightarrow$ SALT + WATER + Carbon Dioxide nitric acid + calcium carbonate $\longrightarrow$ calcium nitrate + water + carbon dioxide	
24	1st Ionisation Energy	The energy to remove 1 mole of electrons from 1 mole of atoms in the gaseous state: $K_{(g)} \longrightarrow K^+_{(g)} + e^-$	
25	2nd Ionisation Energy	The energy to remove 1 mole of electrons from 1 mole of 1+ ions in the gaseous state: $K^+_{(g)} \longrightarrow K^{2+}_{(g)} + e^-$	
26	Initiation In Free Radical Chain Reaction	Free radicals are created in the initiation step of a free radical chain reaction: • Free radicals are only found after the arrow. • Ultraviolet light required to provide the energy for initiation $Cl_2 \longrightarrow Cl^{\cdot} + Cl^{\cdot}$	
27	Propagation In Free Radical Chain Reaction	Free radicals react with molecules to form new molecules and other free radicals • Free radicals found on both sides of the arrow $Cl^{\cdot} + CH_4 \longrightarrow CH_3^{\cdot} + HCl$ $CH_3^{\cdot} + Cl_2 \longrightarrow Cl^{\cdot} + CH_3Cl$	
28	Termination In Free Radical Chain Reaction	Free radicals join together to form molecules. • Free radicals only found before the arrow. $CH_3^{\cdot} + Cl^{\cdot} \longrightarrow CH_3Cl$ $Cl^{\cdot} + Cl^{\cdot} \longrightarrow Cl_2$ $CH_3^{\cdot} + CH_3^{\cdot} \longrightarrow C_2H_6$	