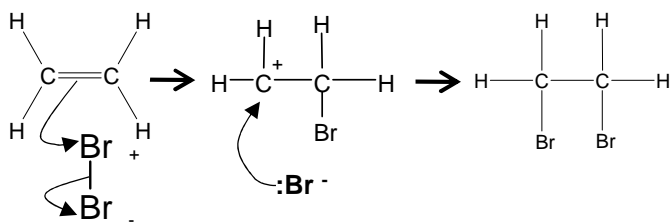
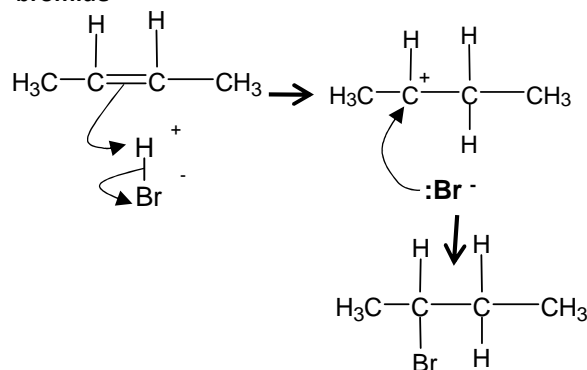
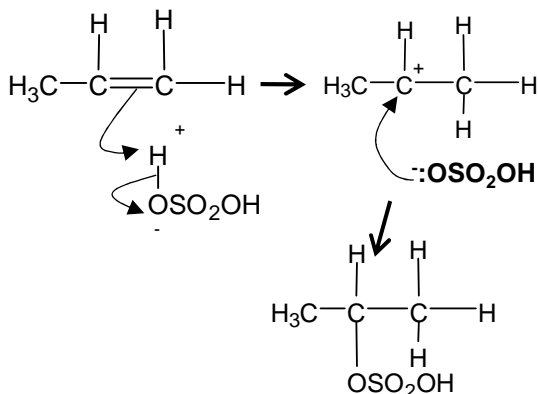
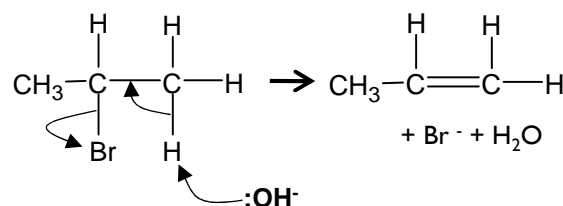
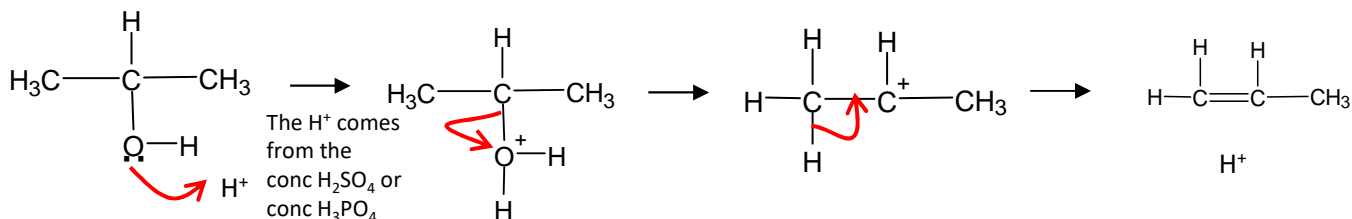
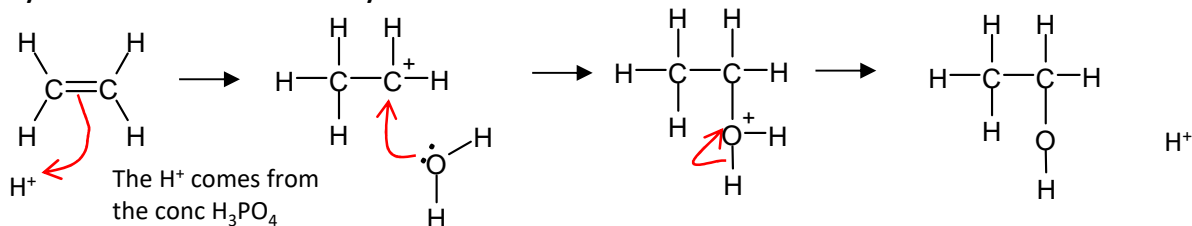
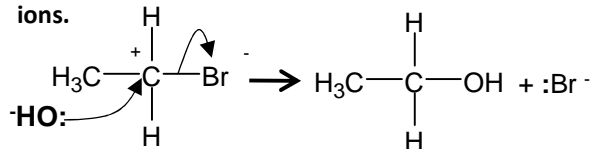
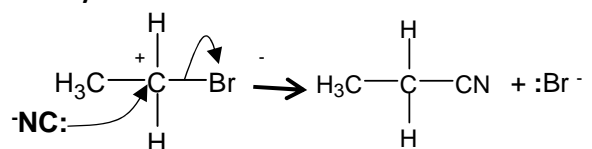
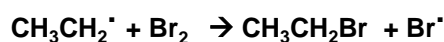
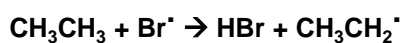
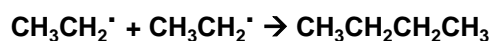


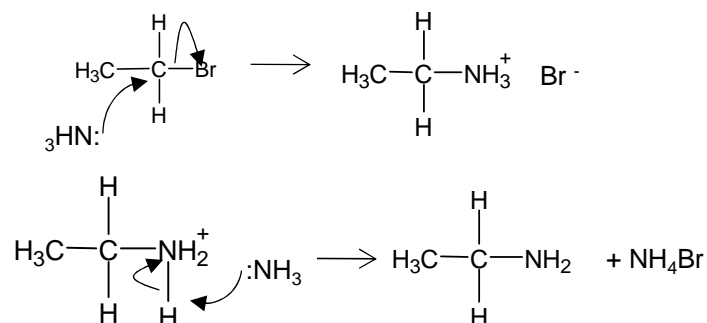
Electrophilic Addition of Alkenes with Bromine**Electrophilic Addition** of Alkenes with hydrogen bromide**Electrophilic Addition** of Alkenes with sulphuric acid**Elimination** of Halogenoalkanes with ethanolic hydroxide ions**Acid catalysed elimination mechanism: alcohols** → alkenes**Acid catalysed addition mechanism for hydration of ethene****Nucleophilic Substitution** of Halogenoalkanes with aqueous hydroxide ions.**Nucleophilic Substitution** of Halogenoalkanes with cyanide ions.**Free Radical Substitution** of Alkanes with Bromine**STEP ONE** Initiation

Essential condition: UV light

**STEP TWO** Propagation**STEP THREE** Termination

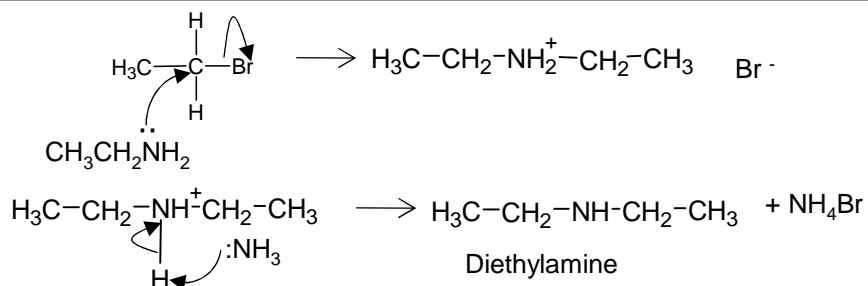
Nucleophilic Substitution reactions of ammonia/amines

Reaction 1 with ammonia forming primary amine

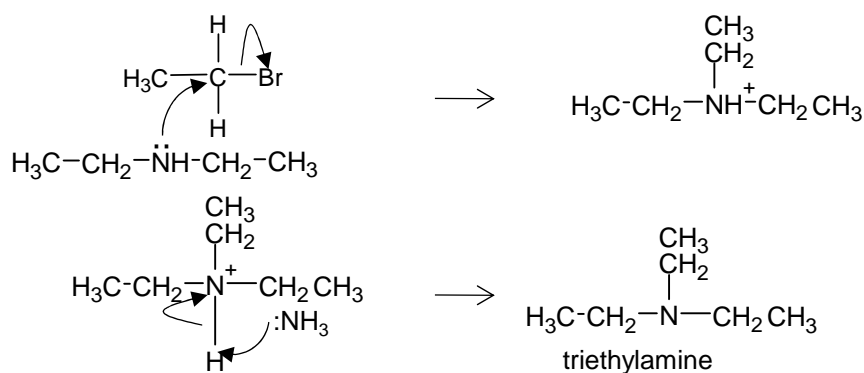


Reaction 2 forming secondary amine

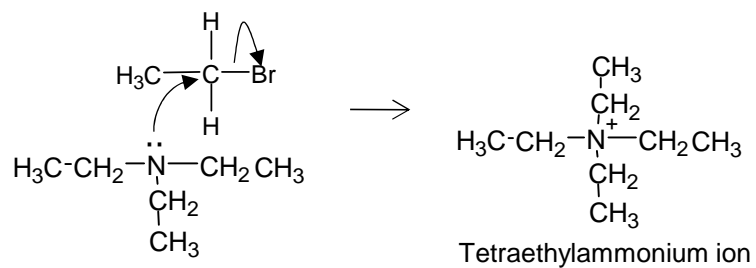
The amine formed in the first reaction has a lone pair of electrons on the nitrogen and will react further with the haloalkane.



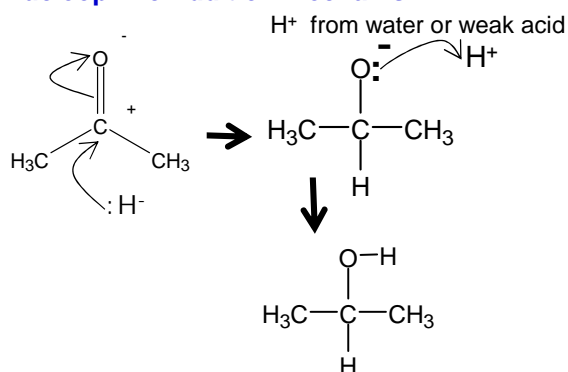
Reaction 3 forming a tertiary amine



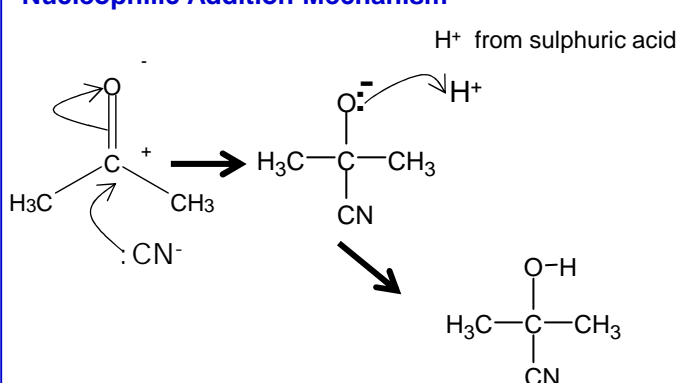
Reaction 4 forming a quaternary ammonium salt



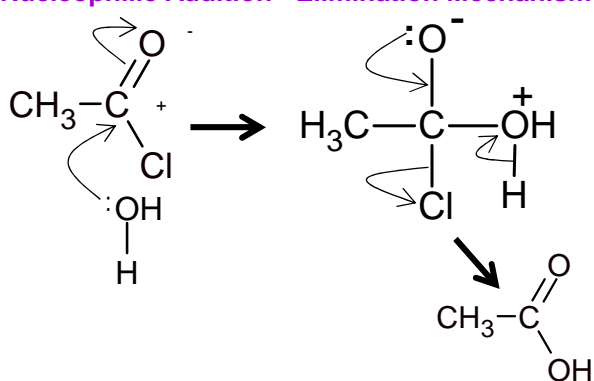
Nucleophilic Addition Mechanism



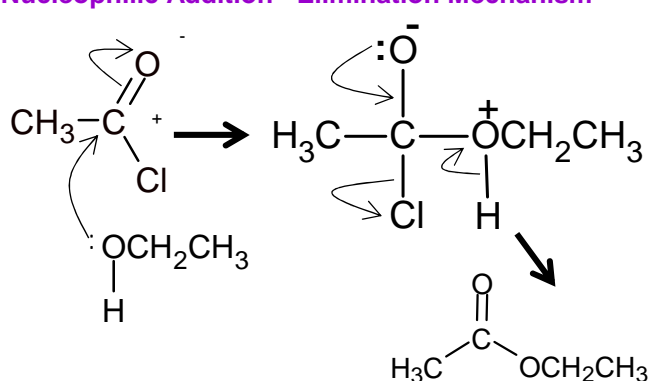
Nucleophilic Addition Mechanism



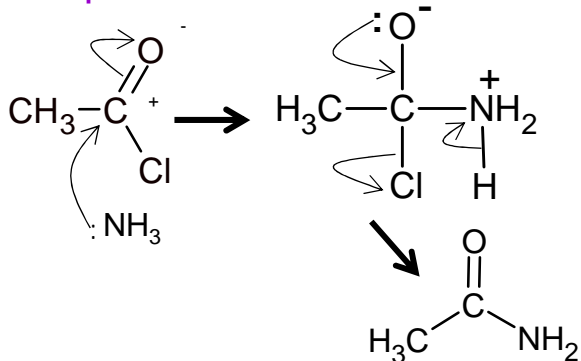
Nucleophilic Addition – Elimination Mechanism



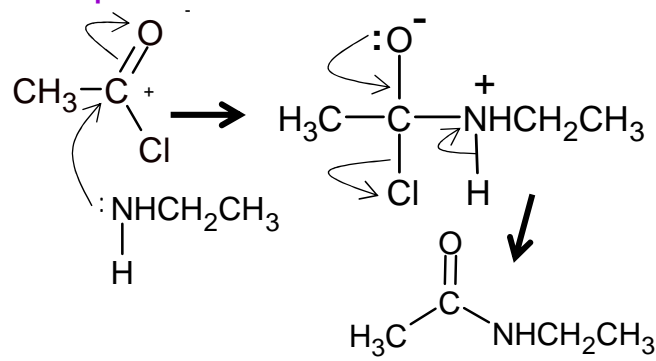
Nucleophilic Addition – Elimination Mechanism



Nucleophilic Addition – Elimination Mechanism

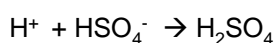
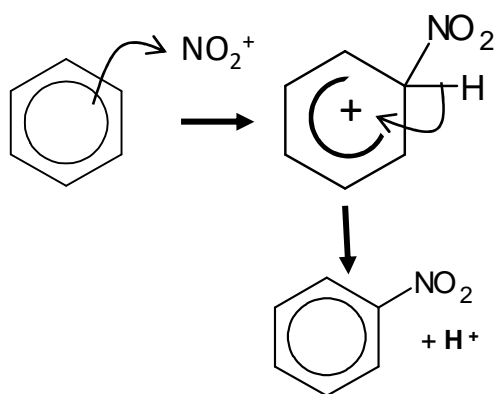


Nucleophilic Addition – Elimination Mechanism



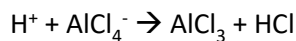
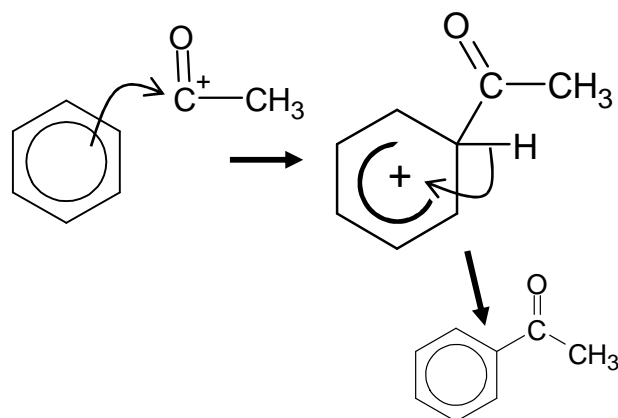
Electrophilic Substitution

Equation for Formation of electrophile
 $\text{HNO}_3 + 2\text{H}_2\text{SO}_4 \rightarrow \text{NO}_2^+ + 2\text{HSO}_4^- + \text{H}_3\text{O}^+$

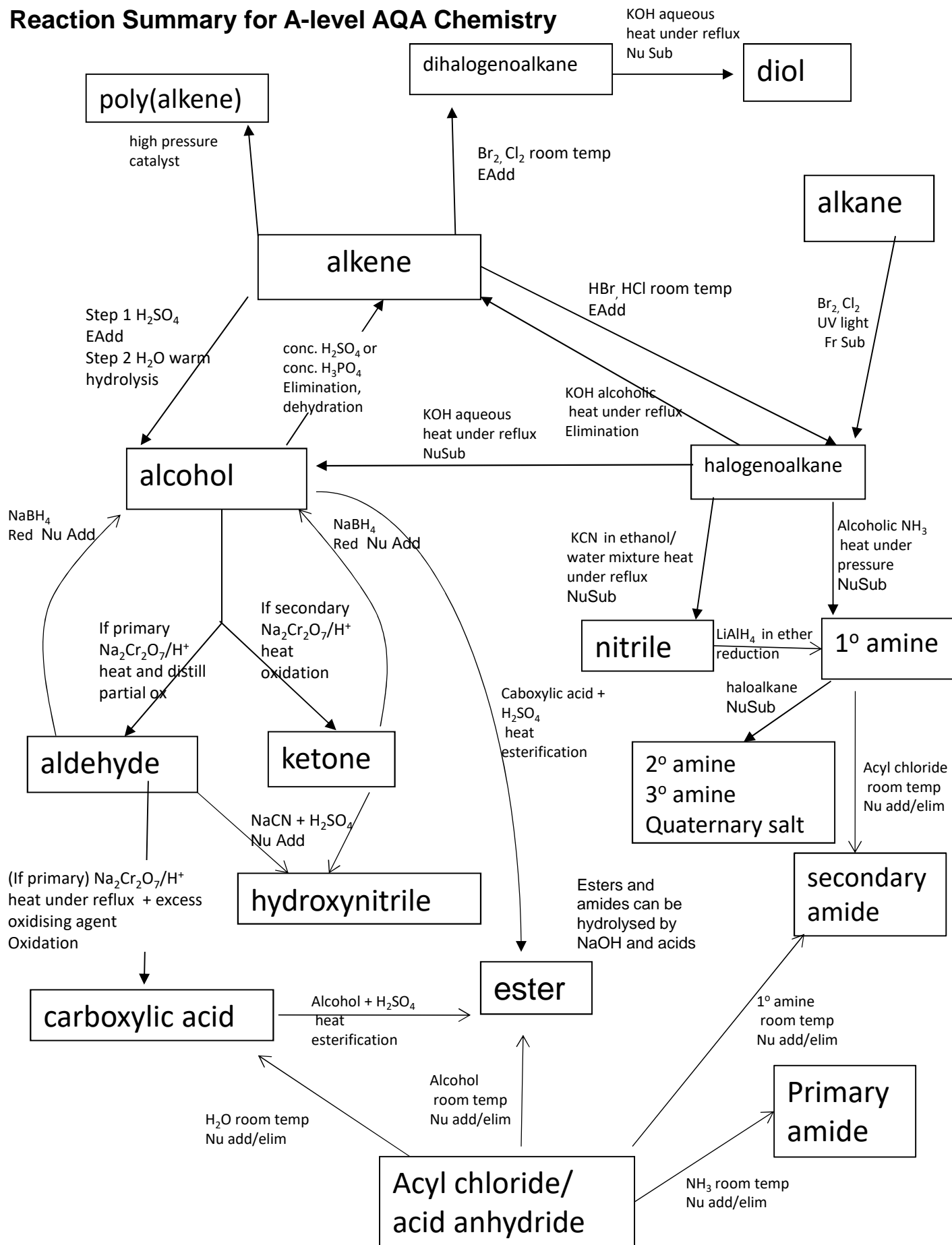


Electrophilic Substitution

Equation for Formation of the electrophile.
 $\text{AlCl}_3 + \text{CH}_3\text{COCl} \rightarrow \text{CH}_3\text{CO}^+ \text{AlCl}_4^-$



Reaction Summary for A-level AQA Chemistry



Aromatic synthetic routes

