4.2.1 Alcohols

(a) **(i)** the polarity of alcohols and an explanation, in terms of hydrogen bonding, of the water solubility and the relatively low volatility of alcohols compared with alkanes **(see also 2.2.2 l and 4.1.2 c)** **(ii)** classification of alcohols into primary, secondary and tertiary alcohols						
(b) combustion of alcohols						
(c) oxidation of alcohols by an oxidising agent, e.g. $Cr_2O_7^{2-}/H+$ (i.e. $K_2Cr_2O_7/H_2SO_4$), including: **(i)** the oxidation of primary alcohols to form aldehydes and carboxylic acids; the control of the oxidation product using different reaction conditions **(ii)** the oxidation of secondary alcohols to form ketones **(iii)** the resistance to oxidation of tertiary alcohols						
(d) elimination of H_2O from alcohols in the presence of an acid catalyst (e.g. H_3PO_4 or H_2SO_4) and heat to form alkenes						
(e) substitution with halide ions in the presence of acid (e.g. $NaBr/H_2SO_4$) to form haloalkanes.						

4.2.2 Halogenoalkanes

(a) hydrolysis of haloalkanes in a substitution reaction: **(i)** by aqueous alkali **(ii)** by water in the presence of $AgNO_3$ and ethanol to compare experimentally the rates of hydrolysis of different carbon– halogen bonds					
(b) definition and use of the term *nucleophile* (an electron pair donor)					
(c) the mechanism of nucleophilic substitution in the hydrolysis of primary haloalkanes with aqueous alkali **(see also 4.1.1 h–i)**					
(d) explanation of the trend in the rates of hydrolysis of primary haloalkanes in terms of the bond enthalpies of carbon–halogen bonds (C–F, C–C*l*, C–Br and C–I)					