

26 Carbonyl and carboxylic acids

Specification reference	Checklist questions	
6.1.2 a	Can you describe oxidation of aldehydes using $\text{Cr}_2\text{O}_7^{2-}/\text{H}^+$ (i.e. $\text{K}_2\text{Cr}_2\text{O}_7/\text{H}_2\text{SO}_4$) to form carboxylic acids?	<input type="checkbox"/>
6.1.2 b i	Can you describe nucleophilic addition reactions of carbonyl compounds with NaBH_4 to form alcohols?	<input type="checkbox"/>
6.1.2 b ii	Can you describe nucleophilic addition reactions of carbonyl compounds with HCN to form hydroxynitriles?	<input type="checkbox"/>
6.1.2 c	Can you describe the mechanism for nucleophilic addition reactions of aldehydes and ketones with NaBH_4 and HCN ?	<input type="checkbox"/>
6.1.2 d i	Can you use 2,4-dinitrophenylhydrazine to detect the presence of a carbonyl group in an organic compound?	<input type="checkbox"/>
6.1.2 d ii	Can you use 2,4-dinitrophenylhydrazine to identify a carbonyl compound from the melting point of a derivative?	<input type="checkbox"/>
6.1.2 e i	Can you use Tollen's reagent to detect the presence of an aldehyde group?	<input type="checkbox"/>
6.1.2 e ii	Can you use Tollen's reagent to distinguish between aldehydes and ketones, explained in terms of the oxidation of aldehydes to carboxylic acids with reduction of silver ions to silver?	<input type="checkbox"/>
6.1.3 a	Can you explain the water solubility of carboxylic acids in terms of hydrogen bonding?	<input type="checkbox"/>
6.1.3 b	Can you describe reactions in aqueous conditions of carboxylic acids with metals and bases (including carbonates, metal oxides and alkalis)?	<input type="checkbox"/>
6.1.3 c i	Can you describe the esterification of carboxylic acids with alcohols in the presence of an acid catalyst (e.g. concentrated H_2SO_4)?	<input type="checkbox"/>

Specification reference	Checklist questions	
6.1.3 c ii	Can you describe the esterification of acid anhydrides with alcohols?	<input type="checkbox"/>
6.1.3 d i	Can you describe the hydrolysis of esters in hot aqueous acid to form carboxylic acids and alcohols?	<input type="checkbox"/>
6.1.3 d ii	Can you describe the hydrolysis of esters in hot aqueous alkali to form carboxylate salts and alcohols?	<input type="checkbox"/>
6.1.3 e	Can you describe the formation of acyl chlorides from carboxylic acids using SOCl_2 ?	<input type="checkbox"/>
6.1.3 f	Can you describe use of acyl chlorides in synthesis in formation of esters, carboxylic acids and primary and secondary amides?	<input type="checkbox"/>