

Spectroscopy

Specification reference	Checklist questions	
4.2.4 a	Can you describe how infrared (IR) radiation causes covalent bonds to vibrate more and absorb energy?	<input type="checkbox"/>
4.2.4 b	Can you explain absorption of infrared radiation by atmospheric gases containing C=O, O–H and C–H bonds (e.g. H ₂ O, CO ₂ and CH ₄), the suspected link to global warming and resulting changes to energy usage?	<input type="checkbox"/>
4.2.4 c i	Can you use an infrared spectrum of an organic compound to identify an alcohol from an absorption peak of the O–H bond?	<input type="checkbox"/>
4.2.4 c ii	Can you use an infrared spectrum of an organic compound to identify an aldehyde or ketone from an absorption peak of the C=O bond?	<input type="checkbox"/>
4.2.4 c iii	Can you use an infrared spectrum of an organic compound to identify a carboxylic acid from an absorption peak of the C=O bond and a broad absorption peak of the O–H bond?	<input type="checkbox"/>
4.2.4 d	Can you interpret and predict an infrared spectrum of familiar or unfamiliar substances using supplied data?	<input type="checkbox"/>
4.2.4 e	Can you use infrared spectroscopy to monitor gases causing air pollution (e.g. CO and NO from car emissions) and in modern breathalysers to measure ethanol in the breath?	<input type="checkbox"/>
4.2.4 f	Can you use a mass spectrum of an organic compound to identify the molecular ion peak and hence to determine molecular mass?	<input type="checkbox"/>
4.2.4 g	Can you analyse fragmentation peaks in a mass spectrum to identify parts of structures?	<input type="checkbox"/>
4.2.4 h i	Can you deduce the structures of organic compounds from different analytical data including elemental analysis?	<input type="checkbox"/>

Specification reference	Checklist questions	
4.2.4 h ii	Can you deduce the structures of organic compounds from different analytical data including mass spectra?	<input type="checkbox"/>
4.2.4 h iii	Can you deduce the structures of organic compounds from different analytical data including IR spectra?	<input type="checkbox"/>