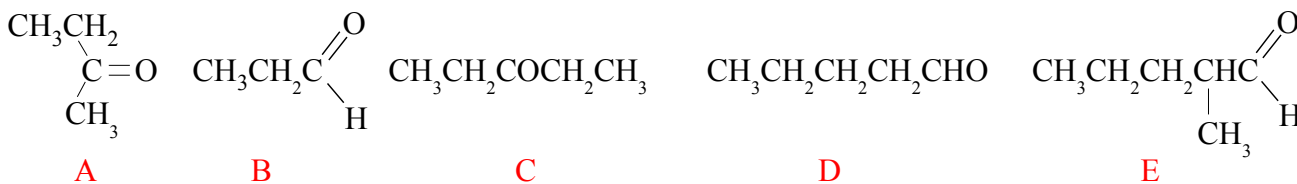


## Chemguide – questions

### ALDEHYDES AND KETONES: INTRODUCCION

1. a) For each of the following structures, say whether they are an aldehyde or a ketone, and name them.



- b) Draw the structures for the following. (You can draw the structures in any of the ways shown above.)
- butanal
  - pentan-2-one
  - 2-methylpropanal
2. a) The carbon-oxygen double bond present in aldehydes and ketones is very polar. What does this mean and how does it arise?
- b) The carbon-oxygen double bond is readily attacked by nucleophiles like cyanide ions or ammonia.
- What do you understand by the term *nucleophile*?
  - Which part of the carbon-oxygen double bond is attractive to nucleophiles?
3. Why is there a difference between aldehydes and ketones in their response to oxidising agents such as potassium dichromate(VI) solution acidified with dilute sulphuric acid?
4. The table taken from the Chemguide page shows the boiling points of an alkane, an aldehyde and an alcohol.

molecule	type	boiling point (°C)
$\text{CH}_3\text{CH}_2\text{CH}_3$	alkane	-42
$\text{CH}_3\text{CHO}$	aldehyde	+21
$\text{CH}_3\text{CH}_2\text{OH}$	alcohol	+78

## Chemguide – questions

- a) What is the point of choosing these particular compounds to compare?
- b) Why is the boiling point of the aldehyde greater than that of the alkane?
- c) Why is the boiling point of the alcohol higher still?
- d) Explain why, unlike the similar-sized alkanes, the small aldehydes and ketones are soluble in water.
- e) Explain why the solubility of aldehydes and ketones falls as the molecules get bigger.