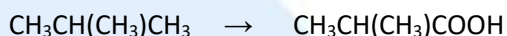


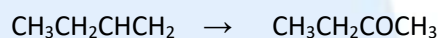
## HL Questions on Synthetic routes

1. Starting with 2-methylpropane deduce a synthetic pathway to make 2-methylpropanoic acid.



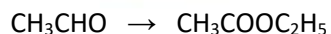
For each step specify the reagents and any necessary conditions and write an equation for each step.

2. Design a synthetic route to make butanone starting with but-1-ene.



Knowing that the first step involves the addition of hydrogen bromide to but-1-ene state the name of the mechanism for the first two steps.

3. You are provided with ethanal and any inorganic reagents and laboratory equipment you require but no other organic compounds.  
Design a method to synthesise ethyl ethanoate from ethanal.



For each step specify the reagents and any necessary conditions.

4. Show how phenylamine can be synthesised from benzene.

5. Propyl ethanoate is used as a solvent and has the characteristic smell of pears.

Design a synthetic route to make propyl ethanoate starting from 1-chloropropane and chloroethane as the only organic compounds available.

