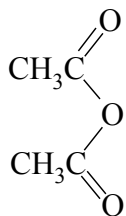


## Chemguide – answers

### ACID ANHYDRIDES: REACTIONS WITH WATER, ALCOHOLS AND PHENOLS

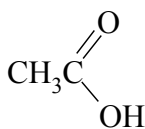
1. a)



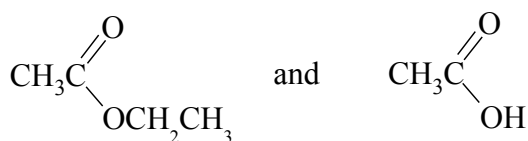
b) (i) The reaction with ethanoic anhydride isn't so vigorous, and no steamy fumes are given produced.

(ii) Ethanoic acid is formed instead of hydrogen chloride gas as the second product of the reaction.

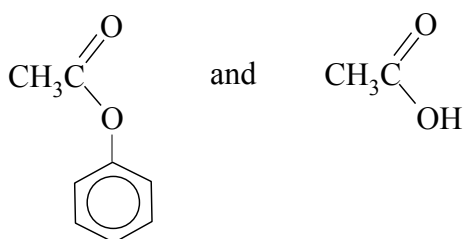
2. a)



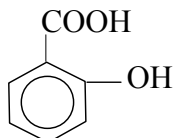
b)



c)



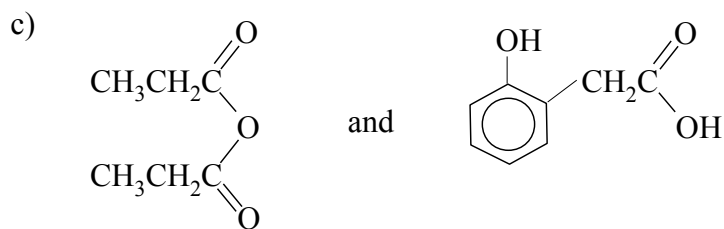
3. a)



b) Any two of:

- Ethanoic anhydride is cheaper than ethanoyl chloride.
- Ethanoic anhydride is safer to use because it is less corrosive and its reactions are less vigorous.
- Ethanoic anhydride doesn't produce poisonous and corrosive fumes of HCl.

## Chemguide – answers



Well done if you got this! It isn't difficult, but *looks* difficult. Just relate it to something you already know. You know that acid anhydrides react with an OH group attached to a benzene ring – and so the top group in your target molecule must come from an acid anhydride, but a bigger one than ethanoic anhydride. You can ignore the other group on the ring as just a distraction. You haven't come across any reaction which would attach a group like this to a benzene ring, so it must have been there already.