ACID ANHYDRIDES: REACTIONS WITH WATER, ALCOHOLS AND PHENOLS

1. a) Draw the structural formula for ethanoic anhydride. (You can show hydrocarbon groups as, for example, CH_3CH_2.)

   b) The reactions of ethanoyl chloride and ethanoic anhydride are very similar but not identical.

      (i) There are differences in what you would observe. What are those differences?

      (ii) There is a difference in what is always formed. What is that difference?

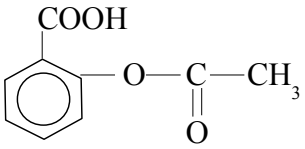
2. Draw the structure(s) of the product(s) you would get if you reacted ethanoic anhydride with the following. As before you can simplify hydrocarbon groups rather than drawing them in full.

   a) water,

   b) ethanol,

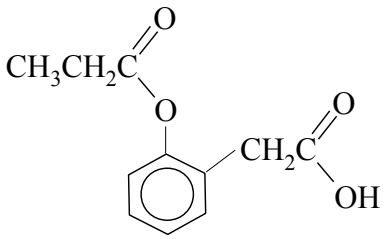
   c) phenol.

3. a) Draw the structure of the molecule that you would react ethanoic anhydride with to make aspirin:



   b) You can also make aspirin using ethanoyl chloride rather than ethanoic anhydride. Suggest any two reasons why ethanoic anhydride is preferred for the manufacture of aspirin.

   c) Draw the structures of the molecules (one of them an acid anhydride) that you would react to make the molecule:



   (Don't panic! It's not that different from what has gone before!)