ESTERS: HYDROLYSIS

1. a) The acid is a catalyst and so doesn't get used up.

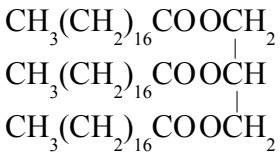
   b) The dilute acid is a source of water. The reaction is reversible, and to tip the equilibrium to the right and maximise the amount of ester hydrolysed, you need to have a high concentration of water in the mixture. You do this by using a lot of dilute acid.

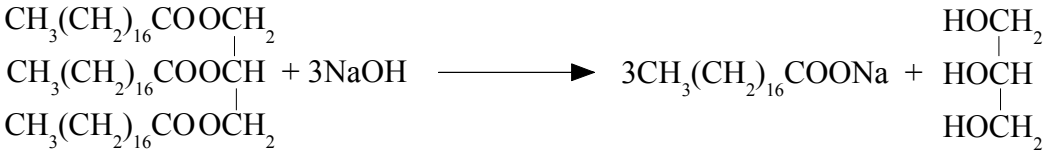
   c) CH_3CH_2COOH and CH_3OH

2. a) $CH_3COOCH_3 + NaOH \longrightarrow CH_3COONa + CH_3OH$

   (If you have shown it as reversible, it's wrong!)

   b) First distil off the methanol. Then convert the sodium salt to ethanoic acid by adding an excess of strong acid such as dilute sulphuric or hydrochloric acid. Finally, distil off the ethanoic acid released.

3. a)


   b)


   (Or you can write the glycerol with the OH groups on the right-hand side as on the Chemguide page. It really doesn't matter!)

   c) $CH_3(CH_2)_{16}COONa$