Chemistry Mock Ex. 1

By Vivian Lau

1. A student wants to find out the percentage purity of an impure sample of anhydrous potassium carbonate by titration. 5.09g of the anhydrous potassium carbonate was dissolved in water and made up to 250cm3. 25cm3 of the solution was pipetted to a conical flask and titrated against 0.2M HCl with methyl orange as indicator.

a) (i) Why should the burette be rinsed with distilled water followed by HCl before use?
(ii) Why should not the conical flask be rinsed with the solution prepared?
b) State the colour change at the end point of the titration.
c) The results of the titration were shown in the table below:

Burette / Titration	1	2	3	4
Final reading (cm3)	42.5	37.0	35.7	36.9
Initial reading (cm3)	1.3	2.2	1.0	1.7
Volume of acid added (cm3)	41.2	34.8	34.7	35.2

Find the percentage purity of anhydrous potassium carbonate sample.

2. 4M potassium chloride is electrolysed using graphite as the electrodes, and the gases evolved at the cathode and anode are collected by test tubes.

a) (i) What gases are evolved from the cathode and anode?
(ii) Give half equations for the changes occurring in the electrodes.
b) (i) What is the theoretical volume ratio of the two gases?
(ii) Will the theoretical volume be the actual volume ratio found in the experiment? Why?
c) Universal indicator is added to the solution. What is its colour change around the electrodes during the electrolysis of KCl solution?
d) Why is it not suitable to use platinum as the electrodes apart from the cost?