EXPERIMENT NO. 3

3 Qualitative Analysis

At each stage of any test you are to record details of the following.

- colour changes seen
- the formation of any precipitate
- the solubility of such precipitates in an excess of the reagent added

Where gases are released they should be identified by a test, **described in the appropriate place in your observations**.

You should indicate clearly at what stage in a test a change occurs.
Marks are **not** given for chemical equations.
No additional tests for ions present should be attempted.

If any solution is warmed, a boiling tube MUST be used.

Rinse and reuse test-tubes and boiling tubes where possible.

Where reagents are selected for use in a test, the name or correct formula of the element or compound must be given.

(a) **FB 4** and **FB 5** are solutions of salts each containing one cation and one anion from those listed in the Qualitative Analysis Notes. Carry out the following tests and record your observations in the table below.

test	*observations*	
	FB 4	**FB 5**
(i) To a 1 cm depth of solution in a test-tube, add aqueous ammonia.		
(ii) To a 1 cm depth of solution in a test-tube, add a few drops of aqueous silver nitrate.		
(iii) To a 1 cm depth of solution in a test-tube add a few drops of aqueous barium chloride or barium nitrate.		

(iv) Identify both ions in **FB 4**.

cation ..... anion .....

(v) Suggest the ions which may be present in **FB 5**.

cations ..... anions .....

(vi) Select a reagent which could be used in a further test on **FB 5** to identify the **cation** present. Carry out your test and record your observations.

test	*observations*
To a 1 cm depth of **FB 5** in a test-tube, add	

The cation in **FB 5** is .....

[7]

(b) **FB 6** is a pale green salt containing two cations.

(i) What does this suggest about the identity of one of the cations in **FB 6**?

.....

Carry out the following tests and complete the table below.

test	*observations*
(ii) Place a spatula measure of **FB 6** in a hard-glass test-tube. Heat gently.	
(iii) Dissolve a small spatula measure of **FB 6** in a 2 cm depth of distilled water in a test-tube. Use this solution for tests **(iv)** and **(v)**.	
(iv) Pour about half the solution prepared in **(iii)** into a boiling tube and add aqueous sodium hydroxide, then	
gently warm the mixture.	
(v) To the remainder of the solution prepared in **(iii)**, add a few drops of aqueous potassium iodide, then	
add a few drops of starch solution.	

(vi) Identify the cations present in **FB 6**.

FB 6 contains .... and ....

(vii) What type of reaction occurred when potassium iodide was added to **FB 6** in **(v)**?

....

[7]

[Total: 14]