





**Questions:**

- (a) Why solution **E** was put into water bath?
  - (b) Write a balanced equation for reaction between **E** and **G**.
  - (c) What is the product which causes the solution to cloud the letter **X**?
  - (d) Draw a graph of time against temperature.
  - (e) Comment on the shape of the graph in relation to the rate of this reaction.
- (15 marks)**

3. Sample **J** is a simple salt containing one cation and one anion. Carry out the experiments described below. Record carefully your observations and make appropriate inferences and hence identify the anion and cation present in sample **J**.

| S/n | Experiment   | Observation | Inference |
|-----|--|-------------|-----------|
| (a) | Observe the appearance of sample <b>J</b> .  |             |           |
| (b) | Perform a flame test.  |             |           |
| (c) | Dissolve a little amount of sample <b>J</b> in a test tube and shake.  |             |           |
| (d) | Heat a little amount of <b>J</b> in a dry test tube.   |             |           |
| (e) | Put a little amount of solid sample in a test tube and add concentrated sulphuric acid drop wise.  |             |           |
| (f) | To a little amount of <b>J</b> in a test tube add dilute nitric acid. Divide the resulting solution into three portions and add the following: |             |           |
|     | (i) Sodium hydroxide solution until in excess to the first portion.  |             |           |
|     | (ii) Excess ammonia solution to the second portion.  |             |           |
|     | (iii) Barium chloride solution followed by dilute hydrochloric acid to the third portion.  |             |           |

**Conclusion:**

- (i) The cation in sample **J** is \_\_\_\_\_ and anion is \_\_\_\_\_.
- (ii) Show the reaction taken place in (f) (i).

**(15 marks)**