

Chemistry

CHM6T/Q14/task

Unit 6T A2 Investigative Skills Assignment

Task Sheet

An investigation of some redox reactions

In modern life there is an increasing need for the development of cells and batteries for the storage of electrical energy in a wide variety of applications. These include cells for electric cars and for portable devices. Cells utilise the energy changes that occur in redox reactions.

In this investigation, you will make observations of the changes that occur in some redox reactions. You are provided with a range of substances that are to be used in six separate tests.

Procedure

- **Wear eye protection at all times.**
- **Assume that all substances are toxic and corrosive.**

Read through all the instructions that follow. On the Candidate Results Sheet, record your observations at the appropriate points in each part of each test. Please note that there may be more than one observation to be recorded for each part.

Test 1

Part 1 Use a spatula to add a small amount (approximately 0.1 g as demonstrated by your teacher) of solid **A** to a boiling tube.

Use a dropping pipette to add about 5 cm³ of hydrochloric acid.

Use a suitable holder to grip the tube. Warm the tube **gently** with a Bunsen burner flame for about 1 minute or until the solid dissolves. (If the solid does not dissolve completely, do **not** continue heating but carry on with the rest of the test.)

Part 2 Add a small piece of zinc metal to the solution in the boiling tube. Place a cotton wool plug in the top of the tube. Shake the tube gently.

Part 3 Place the boiling tube in a test-tube rack. Observe any changes that occur over about 15 minutes while you continue with the other tests.

Test 2

Part 1 In a test tube, place about 1 cm³ of solution **B**.

Add about 1 cm³ of solution **C** and gently shake the mixture.

Part 2 Repeat this test with a fresh sample of solution **B** but add about 2 cm³ of sulfuric acid before solution **C** is added.

Test 3

- Part 1 In a test tube, place about 2 cm³ of solution **D**.
Add about 1 cm³ of sodium hydroxide solution and gently shake the mixture.
- Part 2 Place a stopper securely in the test tube and shake the tube vigorously for a further 2 minutes.

Test 4

In a test tube, place about 2 cm³ of solution **E**.
Add about 2 cm³ of solution **F** and gently shake the mixture.
Allow the mixture to stand for a few minutes.

Test 5

In a test tube, place about 2 cm³ of solution **G**.
Add about 2 cm³ of solution **F** and gently shake the mixture.
Allow the mixture to stand for a few minutes.

Test 6

- Part 1 In a boiling tube, place about 1 cm³ of solution **H**.
Add about 2 cm³ of sodium hydroxide solution and gently shake the mixture.
- Part 2 Now add about 2 cm³ of solution **C** and gently shake the mixture.
Leave this mixture, for approximately 10 minutes, in a beaker of hot water that has just been boiled.

On the Candidate Results Sheet, you are **not** required to identify any compounds or reaction products.

You will use your results in **Section A** of the Written Test.

ISA CHM6T/Q14 Candidate Results SheetCentre Number

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Teacher Group

Candidate Name Candidate Number

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Results

Record your results in this space.

[8 marks]

For Teacher's use only			
R		A	

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