



General Certificate of Education  
Advanced Level Examination  
June 2013

# Chemistry

# CHM6T/Q13/task

## Unit 6T A2 Investigative Skills Assignment

### Task Sheet

#### An investigation of some transition metal compounds

Most transition metal compounds are coloured. Some of them are used as dyes and pigments. A dye is a soluble coloured compound. A pigment is an insoluble coloured compound. Both dyes and pigments have to be resistant to chemical change.

Three solutions, labelled **P**, **Q** and **R**, have been provided by a supplier as possible dyes.

- You will carry out tests on these solutions.
- You will record what you **observe** for each test in a table of your own design on the Candidate Results Sheet.
- Where no visible change is observed, write 'no visible change'.

In this task, you are **not** required to identify any of the solutions or any of the reaction products.

#### Procedure

- **Wear eye protection at all times.**
- **Assume that all solutions are toxic and corrosive.**
- **Use a separate sample in each of the following tests.**

**Test 1(a)** Place about 10 drops of solution **P** in a test tube.  
Add sodium hydroxide solution, dropwise with gentle shaking, until in excess.  
**Do not discard this mixture.**

Repeat this test with solution **Q** and then solution **R**.

**Test 1(b)** Half fill a 250 cm<sup>3</sup> beaker with the freshly boiled water provided.  
Allow the three test tubes containing the mixtures from **Test 1(a)** to stand in the beaker of hot water for about 10 minutes.

While you are waiting, begin **Test 2**.

**Test 2** Place about 10 drops of sodium carbonate solution in a test tube.  
Add about 10 drops of solution **P** and shake the mixture gently.

Repeat this procedure with solution **Q** and then with solution **R**.

**Test 3** Place about 10 drops of solution **P** in a test tube.  
Add about 10 drops of silver nitrate solution and shake the mixture gently.

Repeat this procedure with solution **Q** and then with solution **R**.  
Allow the three test tubes to stand for about 10 minutes.

**ISA CHM6T/Q13 Candidate Results Sheet**Centre Number 

--	--	--	--	--

Teacher Group .....

Candidate Name ..... Candidate Number 

--	--	--	--

**Results**

Record your observations in an appropriate table in the space below.

*(8 marks)*

For Teacher's use only			
R		A	