



UNIVERSITY *of* CAMBRIDGE
International Examinations

Script F
Without Marks

Chemistry
0620/06

June 2002



UNIVERSITY *of* CAMBRIDGE
Local Examinations Syndicate

Centre Number

Candidate
Number

Candidate Name

**International General Certificate of Secondary Education
CAMBRIDGE INTERNATIONAL EXAMINATIONS**

CHEMISTRY

0620/6

PAPER 6 Alternative to Practical

MAY/JUNE SESSION 2002

1 hour

Candidates answer on the question paper.
No additional materials are required.

TIME 1 hour

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

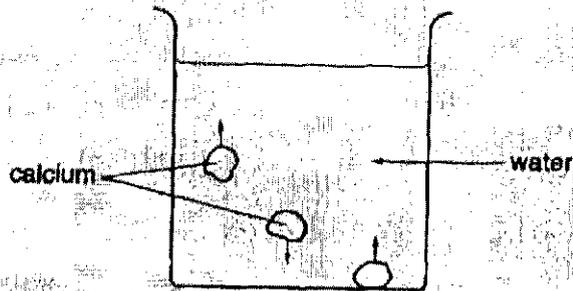
INFORMATION FOR CANDIDATES

The number of marks is given in brackets [] at the end of each question or part question.

FOR EXAMINER'S USE

This question paper consists of 11 printed pages and 1 blank page.

- 4 Small pieces of calcium are added to a beaker of cold water. The pieces of calcium move up and down.



- (a) Give one other observation expected in this reaction.

Efferescence.....[1]

- (b) Suggest why the pieces of calcium move up and down.

It is reacting with the water.....[1]

- (c) Suggest a value for the pH of the solution formed.

9.....[1]

- 5 A student investigated the redox reaction between potassium manganate(VII) and iron(II) ions. Two different aqueous solutions of potassium manganate(VII), A and B, were used.

Experiment 1

A burette was filled to the 0.0 cm³ mark with the solution A of aqueous potassium manganate(VII). A 25 cm³ sample of aqueous iron(II) ions was added into a conical flask from a measuring cylinder.

Solution A was gradually added until there was just a permanent pale pink colour in the contents of the flask.

Use the burette diagram to read the volume added and record the volume in the table.

Experiment 2

Experiment 1 was repeated using the solution B of potassium manganate(VII) instead of solution A.

Use the burette diagram to read the volume added and complete the table.

A little of the contents of the flask were poured into a test-tube. Excess aqueous sodium hydroxide was added to the tube.

A red-brown precipitate was formed.

Table of results

Burette readings/cm ³				
	Experiment 1		Experiment 2	
Final reading		24.9		12.5
Initial reading	0.0		0.0	
Difference	24.9 0.1		12.5 12.5	

(a) (i) In which Experiment was the greatest volume of aqueous potassium manganate(VII) used?

In experiment 2 [1]

(ii) Compare the volumes of potassium manganate(VII) used in Experiments 1 and 2.

The volume of potassium manganate (VII) used in experiment 1 was 0.1 cm³ compared to the 12.5 cm³ used in experiment 2. [2]

(iii) Suggest an explanation for the difference in the volumes.

The 2.5 cm³ sample of aqueous iron (II) ions had less iron (II) ions in the first experiment than in the second. [1]

(iv) Predict the volume of solution B which would be needed to completely react with 50 cm³ of the solution of Iron(II) ions.

12.5 x 2 = 25 cm³ [2]

(b) What product is formed in the flask at the end of the reaction? Give a reason for your answer.

product Iron manganate (VII) reason the iron ions displaced the potassium manganate [2]

(c) Explain one change you could make to the apparatus used in the experiments to obtain more accurate results.

change bigger scaled apparatus can be used explanation The margin of error would be smaller [2]