Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

6948987238

CHEMISTRY **0620/62**

Paper 6 Alternative to Practical **February/March 2017**

1 hour

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

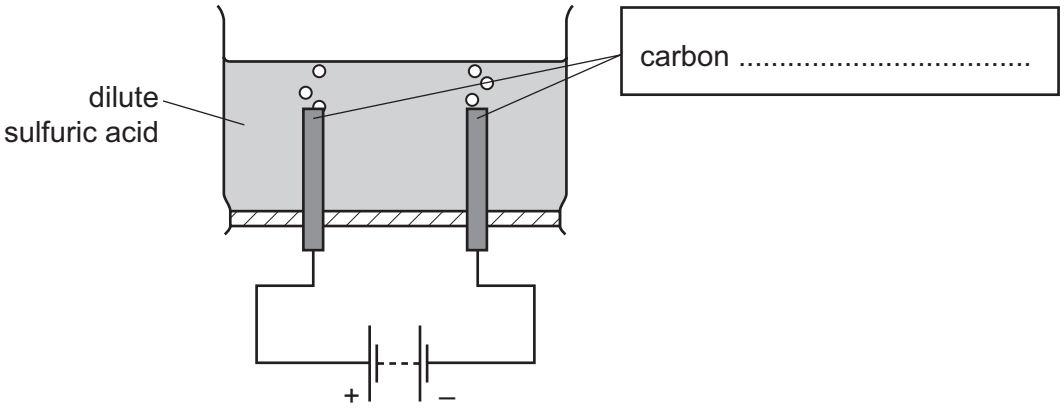
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **8** printed pages.

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1 A student investigated the gases formed during the electrolysis of dilute sulfuric acid using the apparatus shown.
Hydrogen and oxygen were produced.



(a) Complete the box to name the apparatus used. [1]

(b) On the diagram, sketch how a sample of **one** of the gases could be collected. [2]

(c) Give a test for oxygen.

test .....

result .....
[1]

(d) The gas collected at the positive side turned limewater milky.

(i) Based on this observation, what gas was present?

..... [1]

(ii) Suggest how this gas was formed.

..... [1]

(e) A solution of dilute sulfuric acid was electrolysed for 1 hour.

Suggest why the pH of the solution **decreased** during the electrolysis.

.....

..... [2]

[Total: 8]

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Question 2 starts on the next page.

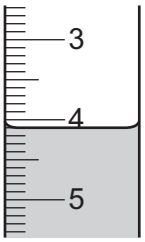
2 A student investigated the reaction between dilute hydrochloric acid and two different aqueous solutions of sodium hydroxide labelled solution **O** and solution **P**.

Two experiments were carried out.

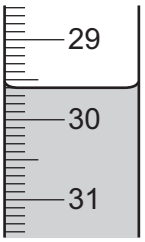
Experiment 1

- A burette was filled with dilute hydrochloric acid. The initial burette reading was recorded.
- Using a measuring cylinder, 20 cm^3 of solution **O** were poured into a conical flask.
- Thymolphthalein indicator was added to the conical flask.
- The dilute hydrochloric acid was added from the burette, while swirling the flask, until the solution just changed colour. The final burette reading was recorded.

(a) Use the burette diagrams to record the readings in the table and complete the table.



initial reading



final reading

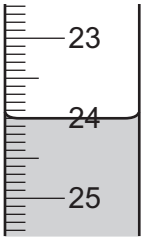
final burette reading / cm^3	
initial burette reading / cm^3	
difference / cm^3	

[2]

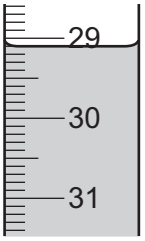
Experiment 2

- The conical flask was emptied and rinsed with distilled water.
- Experiment 1 was repeated using solution **P** instead of solution **O**.

(b) Use the burette diagrams to record the readings in the table and complete the table.



initial reading



final reading

final burette reading / cm^3	
initial burette reading / cm^3	
difference / cm^3	

[2]

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(c) What type of chemical reaction occurs when dilute hydrochloric acid reacts with sodium hydroxide solution?

..... [1]

(d) (i) Which solution of sodium hydroxide, solution **O** or solution **P**, is the more concentrated? Explain your answer.

.....

..... [2]

(ii) How many times more concentrated is this solution of sodium hydroxide than the other solution of sodium hydroxide?

..... [1]

(e) If Experiment 2 were repeated using 10 cm^3 of solution **P**, what volume of dilute hydrochloric acid would be needed?

..... [2]

(f) What would be the effect, if any, on the volume of dilute hydrochloric acid used in Experiment 1 if the solution of sodium hydroxide were **warmed** before adding the dilute hydrochloric acid? Give a reason for your answer.

effect on volume .....

reason .....
[2]

(g) (i) What would be a more accurate method of measuring the volume of the aqueous sodium hydroxide solution?

..... [1]

(ii) Suggest how the reliability of the results could be checked.

..... [1]

(h) Aqueous sodium hydroxide reacts with aqueous calcium chloride to form a precipitate of calcium hydroxide.

Use this information to suggest a **different** method of finding out which of the solutions of sodium hydroxide is the more concentrated.

.....

.....

.....

..... [3]

[Total: 17]

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[Turn over

3 Two solids, **Q** and **R**, which are both salts, were analysed. Solid **Q** was zinc bromide.
Tests were carried out on each solid.

tests on solid Q

Solid **Q** was dissolved in distilled water.
The solution was divided into three equal portions in three test-tubes, and the following tests were carried out.

Complete the expected observations.

(a) (i) Drops of aqueous sodium hydroxide were added to the first portion of the solution until a change was seen.

observations ..... [2]

(ii) Excess aqueous sodium hydroxide was then added to the mixture.

observations ..... [1]

(b) (i) Drops of aqueous ammonia were added to the second portion of the solution until a change was seen.

observations ..... [1]

(ii) Excess aqueous ammonia was then added to the mixture.

observations ..... [1]

(c) Dilute nitric acid and aqueous silver nitrate were added to the third portion of the solution.

observations ..... [2]

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tests on solid R

Tests were carried out and the following observations made.

tests on solid **R**	observations
test 1 A flame test was carried out on solid **R**.	yellow colour
Solid **R** was dissolved in distilled water. The solution was divided into two equal portions in two test-tubes. **test 2** Dilute nitric acid and aqueous barium nitrate were added to the first portion of the solution.	no change
test 3 Dilute nitric acid and aqueous silver nitrate were added to the second portion of the solution.	yellow precipitate formed

(d) Identify solid **R**.

..... [2]

[Total: 9]

4 When solid barium hydroxide is added to solid ammonium chloride a reaction takes place.

(a) Describe an experiment to show that this reaction is endothermic.

.....

.....

.....

.....

.....

..... [4]

(b) How could you show whether or not the final mixture contains ammonium ions?

.....

.....

.....

..... [2]

[Total: 6]

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