



Rewarding Learning

General Certificate of Secondary Education

Centre Number

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Candidate Number

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Chemistry

Unit 3: Practical Skills

Booklet A

Foundation Tier

[GCM31]

Assessment



GCM31

TIME

2 hours.

Assessment Level of Control:

Tick the relevant box (✓)

Controlled Conditions	
Other	

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

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

Answer **all** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is **30**.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Follow all health and safety instructions.

You may use a ruler and calculator if required.

The apparatus and materials required to complete the task(s) are provided.

A Data Leaflet, which includes a Periodic Table of the Elements, is included in this question paper.

For Examiner's use only	
Question Number	Marks
1	
2	

Total Marks	
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1 (a) Using a measuring cylinder, place 25 cm³ of sodium hydroxide solution into a conical flask.

(i) Describe the appearance of the sodium hydroxide solution.

_____ [1]

(ii) For this part, you should record your results in the table below.

1. Add 3 drops of phenolphthalein indicator to the sodium hydroxide solution in the conical flask.
2. Fill the burette with hydrochloric acid (which is labelled **hydrochloric acid for use in question 1**).
3. Record the initial burette reading in the table to 1 decimal place.
4. Place the conical flask containing the sodium hydroxide solution under the burette and add the hydrochloric acid, while swirling, until the phenolphthalein just changes colour. Record the colour change of the indicator in the table.
5. Record the final burette reading in the table to 1 decimal place.
6. Calculate the volume of hydrochloric acid added from the burette to one decimal place and insert the value in the table.
7. **Keep the conical flask and its contents for use in part (b).**

Initial burette reading/cm ³	
Final burette reading/cm ³	
Volume of hydrochloric acid added/cm ³	
Colour change of indicator	From _____ to _____

[6]

Examiner Only

Marks Remark

- (b) (i) Using a balance, measure out between 0.50 and 0.60 g of charcoal in a weighing boat and record the mass below.

Mass of charcoal = _____ [2]

- (ii) For this part, you should record your results in the table below.

1. Add the charcoal from the weighing boat to the conical flask from part (a). Place the conical flask on a gauze on top of a tripod.
2. Using a Bunsen burner, heat the conical flask. Stop heating when the contents begin to bubble.
3. Allow the conical flask and its contents to cool.
4. Fold a piece of filter paper and place it in a filter funnel. Moisten the filter paper with deionised water to keep it in place.
5. Filter the contents of the cooled conical flask into a clean conical flask. The filtrate will be collected in the clean conical flask and the residue will remain in the filter paper.
6. Transfer the filtrate to a small beaker and **keep for part (c)**.
7. Complete the table below.

Appearance of residue	
Appearance of filtrate	

[4]

- (c) Use the filtrate obtained from part (b)(ii) for the following tests.

- (i) Using a 10 cm³ measuring cylinder, measure 5 cm³ of the filtrate and place it in a test tube. Add 2 drops of silver nitrate solution to the test tube. Record your observations.

_____ [2]

- (ii) Dip a piece of nichrome wire into the filtrate and place the nichrome wire in a blue Bunsen burner flame. What is the colour of the flame observed?

_____ [1]

Examiner Only

Marks Remark

2 For question 2, you are provided with calcium metal and solutions of ethanoic acid and hydrochloric acid (labelled **hydrochloric acid for use in question 2**).

(a) (i) Describe the appearance of the calcium.

_____ [2]

(ii) Place two pieces of universal indicator paper onto a white tile. Using a glass rod, place a drop of **ethanoic** acid onto one of the pieces of universal indicator paper. Rinse the glass rod with deionised water and use it to place a drop of **hydrochloric acid** (which is labelled **hydrochloric acid for use in question 2**) onto the second piece of universal indicator paper. Record the colour of each piece of universal indicator paper and use the pH colour chart to determine and record the pH of the ethanoic acid and of the hydrochloric acid in the table below.

Acid	Colour of universal indicator paper	pH
ethanoic acid		
hydrochloric acid		

[4]

(iii) Using a 10 cm³ measuring cylinder, measure out 5 cm³ of ethanoic acid and place it in a test tube. Using tweezers, add one piece of calcium to the test tube.

Record your observations.

_____ [2]

Examiner Only

Marks Remark

(b) Before starting the practical work for part (b), carefully read through the method given below.

1. Using a 25 cm³ measuring cylinder, place 20 cm³ of hydrochloric acid (labelled **hydrochloric acid for use in question 2**) into a small beaker.
2. Using tweezers, add one piece of calcium to the beaker and immediately start the stopclock.
3. Stop the clock when the calcium has completely disappeared and record the time taken in seconds in the table below.
4. Rinse the 25 cm³ measuring cylinder with deionised water and use it to place 20 cm³ of ethanoic acid into a different small beaker.
5. Using tweezers, add one piece of calcium to the beaker and immediately start the stopclock.
6. Stop the clock when the calcium has completely disappeared and record the time taken in seconds in the table below.

(i) Complete the table below by inserting the correct heading and units into the second column. Carry out the practical procedure and use this table to record your results.

Reaction	
calcium + hydrochloric acid	
calcium + ethanoic acid	

[4]

(ii) State which reaction was faster.

_____ [1]

(iii) Use your results to explain your answer to (b)(ii) above.

_____ [1]

THIS IS THE END OF THE QUESTION PAPER

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