Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
2019

Chemistry

Unit 3: Practical Skills

Booklet A

Foundation Tier

GCM31

[GCM31]

TIME

2 hours.

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	

Examiner Only	
Marks	Remark

1 **(a)** Using the 10 cm^3 measuring cylinder, place 10 cm^3 of hydrochloric acid in the test tube and place in the test tube rack.

(i) Describe the appearance of the hydrochloric acid.

_____ [2]

(ii) Using the thermometer, measure the temperature of the hydrochloric acid. Record this temperature including the units.

_____ [1]

(iii) Describe the appearance of the magnesium ribbon.

_____ [2]

(iv) Add the magnesium ribbon to the hydrochloric acid in the test tube.
Stir using the thermometer.
Record the highest temperature obtained, including units.
Record any other observations, apart from the change in temperature.

Highest temperature: _____

Observations: _____

_____

_____ [3]

(b) (i) Describe the appearance of the marble chips.

_____ [2]

(ii) Please read all of the following instructions before starting the practical.

- Using the 25 cm^3 measuring cylinder, place 25 cm^3 of hydrochloric acid in the small beaker.
- Place the beaker on the electronic balance.
- Add the 5 marble chips to the acid in the beaker, start the timer and at the same time record the mass in the table at time 0 minutes.
- Record the mass every minute up to 5 minutes.

Time (minutes)	Mass (g)
0	
1	
2	
3	
4	
5	

[3]

(iii) Calculate the total loss in mass. Include the units.

_____ [2]

Examiner Only

Marks	Remark

Examiner Only	
Marks	Remark

2 **(a)** State the maximum volume which can be measured using the burette you have been given. Include the units.

_____ [2]

(b) You will now carry out a titration and use the table below to record the results.
All values in the table should be recorded to 1 decimal place.

	Initial burette reading (cm^3)	Final burette reading (cm^3)	Titre (cm^3)
Rough titration			
First accurate titration			
Second accurate titration			

(i) Carry out the following procedure.

1. Using the 25.0 cm^3 pipette and safety pipette filler place 25.0 cm^3 of sodium hydroxide solution into each of the three conical flasks.
2. Add 3 drops of phenolphthalein indicator to each conical flask.
3. Fill the burette with hydrochloric acid and ensure the jet is filled.
4. Place the first conical flask on a white tile below the burette.
5. Record the initial burette reading for the rough titration in the table.
6. Add hydrochloric acid from the burette to the conical flask until the indicator changes colour.
7. Record the final burette reading for the rough titration and calculate the titre.
8. Refill the burette, if necessary, and place the second conical flask on the white tile below the burette. Record the initial burette reading for the first accurate titration.
9. Add the hydrochloric acid to the conical flask rapidly until approximately 3 cm^3 less acid is added than the titre obtained for the rough titration.
10. Continue to add hydrochloric acid to the conical flask from the burette dropwise until one drop causes the indicator to change colour.
11. Record the final burette reading for the first accurate titration and calculate the titre.
12. Repeat steps 8 to 11 for the second accurate titration.

[9]

(ii) Calculate the average titre. Include the units.

_____ [2]

(iii) State the colour change at the end-point.

From _____ to _____ [2]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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