Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2015

Centre Number

Candidate Number

Chemistry

Assessment Unit AS 3
assessing
Module 3: Practical Examination

Practical Booklet A

MV18

[AC133]

FRIDAY 8 MAY, MORNING

TIME

1 hour 15 minutes, plus your additional time allowance.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Answer **both** questions.
Write your answers in the spaces provided.

INFORMATION FOR CANDIDATES

The total mark for this paper is 24.
Question 1 is a practical exercise worth 8 marks.
Question 2 is a practical exercise worth 16 marks.
Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.
A Periodic Table of Elements (including some data) is provided.
You may not have access to notes, textbooks and other material to assist you.

Safety glasses should be worn at all times and care should be taken during this practical examination.

1 Titration

You are required to titrate sodium hydroxide solution of unknown concentration against standard sulfuric acid solution.

You are provided with:

0.1 mol dm^{-3} sulfuric acid solution

sodium hydroxide solution of unknown concentration

phenolphthalein indicator

- Rinse out a burette with the 0.1 mol dm^{-3} sulfuric acid solution.
- Fill the burette with the 0.1 mol dm^{-3} sulfuric acid solution.
- Rinse out a pipette with the sodium hydroxide solution.
- Using the pipette and a pipette filler, place 25.0 cm^3 of the sodium hydroxide solution in the conical flask.
- Add 3 drops of phenolphthalein to the conical flask, and titrate with the 0.1 mol dm^{-3} sulfuric acid solution until the end point is reached.

Present your results in a suitable table and calculate the average titre. [8 marks]

2 Observation

You are provided with three unknown substances, solution **A**, solid **B** and liquid **C**. Carry out the tests described below and record your observations.

(a) Tests on solution **A**

	Test	Observations
1	Transfer 1 cm^3 of the solution **A** into each of three separate test tubes. **(a)** Add 5 drops of sodium hydroxide solution to the first test tube. [2 marks] **(b)** Add 5 cm^3 of sodium hydroxide solution to this test tube. [1 mark]	
2	Add 5 drops of barium chloride solution to the second test tube. [2 marks]	
3	Add 5 drops of silver nitrate solution to the third test tube. [1 mark]	

(b) Tests on solid **B**

	Test	Observations
1	Describe the appearance of **B**. [1 mark]	
2	**(a)** Add half a spatula measure of **B** to a test tube one quarter filled with dilute ethanoic acid. [2 marks] **(b)** Use limewater to test any gas that is produced. [1 mark]	
3	Add a spatula measure of **B** to a dry boiling tube and heat. [1 mark]	
4	Dip a clean nichrome wire loop into concentrated hydrochloric acid, touch sample **B** with the wire, then hold it in a blue Bunsen flame. [1 mark]	

(c) Tests on liquid **C**

N.B. Water bath filled using hot water from a kettle.

	Test	Observations
1	To 1 cm^3 of **C** in a test tube add 1 cm^3 of water. [1 mark]	
2	Place 10 drops of **C** on a watch glass on a heatproof mat. Ignite it using a burning splint. [1 mark]	
3	Add 10 drops of **C** to 2 cm^3 of acidified potassium dichromate solution in a test tube. Warm the mixture gently in a water bath. [2 marks]	

THIS IS THE END OF THE QUESTION PAPER

Question Number	Marks	
	Examiner Mark	Remark
1		
2		
Total Marks		

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Chemistry

Assessment Unit A2 3
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Module 3: Practical Examination
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MV18

[AC233]

TUESDAY 5 MAY, MORNING

TIME

1 hour 15 minutes, plus your additional time allowance.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Answer **both** questions.
Write your answers in the spaces provided.

INFORMATION FOR CANDIDATES

The total mark for this paper is 20.
Question 1 is a practical exercise worth 8 marks.
Question 2 is a practical exercise worth 12 marks.
Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.
A Periodic Table of Elements (including some data) is provided.
You may not have access to notes, textbooks and other material to assist you.

Practical Booklet A

Safety glasses must be worn at all times and care should be exercised during the practical examination.

1 Titration exercise

You are required to titrate standard sodium thiosulfate solution against iodine liberated by the reaction of a solution of potassium iodate(V) with acidified potassium iodide solution.

You are provided with the following:

- a solution of potassium iodate(V)
- four 20 cm^3 portions of sulfuric acid
- potassium iodide solution
- sodium thiosulfate solution of concentration 0.10 mol dm^{-3}
- starch indicator

1. Rinse and fill the burette with the appropriate solution.
2. Use a measuring cylinder to pour 10 cm^3 of potassium iodide solution into a 250 cm^3 conical flask.
3. Add 20 cm^3 of dilute sulfuric acid to the solution in the conical flask.
4. Use a measuring cylinder to add 5 cm^3 of potassium iodate(V) solution to the acidified potassium iodide solution.
5. Titrate 0.10 mol dm^{-3} sodium thiosulfate solution against the iodine formed.

Present your results in a suitable table and calculate the average titre. [8 marks]

Results table

2 Observation exercise

(a) You are provided with a salt, labelled **X**. Carry out the following tests on **X** and record your observations in the table below.

Test	Observations
1 Describe the appearance of **X**.	[1 mark]
2 Add 3 spatula measures of **X** to 20 cm^3 of water and stir until there is no further change. Use this solution for tests 3, 4 and 5.	[1 mark]
3 **(a)** In a fume cupboard add 5 drops of concentrated ammonia solution to 2 cm^3 of the solution of **X** in a test tube. **(b)** Add a further 5 cm^3 of concentrated ammonia solution to the test tube.	[2 marks]
4 **(a)** Add 5 drops of sodium hydroxide solution to 2 cm^3 of the solution of **X** in a test tube. **(b)** Add a further 5 cm^3 of sodium hydroxide solution to the test tube.	[2 marks]

5	Add 2 cm^3 of barium chloride solution to a test tube containing 2 cm^3 of the solution of **X**.	[1 mark]
6	Place a half spatula measure of **X** onto a watch glass in a fume cupboard. Wearing gloves, slowly add 10 drops of concentrated sulfuric acid to **X**.	[1 mark]
7	Place a spatula measure of **X** in a dry boiling tube. Heat the boiling tube gently.	[2 marks]

(b) You are provided with an organic liquid labelled **Y**. Carry out the following tests and record your observations in the table below.

N.B. Water bath filled using hot water from a kettle.

Test		Observations
1	Add 10 drops of **Y** to 2 cm^3 of acidified potassium dichromate solution in a test tube. Place the test tube in a hot water bath for 5 minutes.	[1 mark]
2	Add 1 cm^3 of **Y** to 2 cm^3 of Fehling's solution in a test tube. Place the test tube in a hot water bath for 5 minutes.	[1 mark]

THIS IS THE END OF THE QUESTION PAPER

Question Number	Marks	
	Examiner Mark	Remark
1		
2		
Total Marks		