



*Rewarding Learning*

**ADVANCED SUBSIDIARY (AS)  
General Certificate of Education  
2014**

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## **Chemistry**

**Assessment Unit AS 3**

*assessing*

**Module 3: Practical Examination**

**Practical Booklet A**

**[AC133]**

**WEDNESDAY 7 MAY, MORNING**

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**MARK  
SCHEME**

## Annotation

1. Please do all marking in **red** ink.
2. All scripts are checked for mathematical errors. Please adopt a system of one tick (✓) equals 1 mark, e.g. if you have awarded 4 marks for part of a question then 4 ticks (✓) should be on this candidate's answer.
3. The total mark for each question should be recorded in a circle placed opposite the question number in the teacher mark column.
4. As candidates have access to scripts please do not write any inappropriate comments on their scripts.

## General points

- All calculations are marked according to the number of errors made.
- Errors can be carried through. If the wrong calculation is carried out then the incorrect answer can be carried through. One mistake at the start of a question does not always mean that all marks are lost.
- Listing is when more than one answer is given for a question that only requires one answer, e.g. the precipitate from a chloride with silver nitrate is a white solid; if the candidate states a white or a cream solid, one answer is correct and one answer is wrong. Hence they cancel out.
- Although names might be in the mark scheme it is generally accepted that formulae can replace them. Formulae and names are often interchangeable in chemistry.
- The marking of colours is defined in the 'CCEA GCE Chemistry Acceptable Colours' document.

## MARKING GUIDELINES

### Interpretation of the Mark Scheme

- **Carry error through**  
This is where mistakes/wrong answers are penalised when made, but if carried into further steps of the question, then no further penalty is applied. This pertains to calculations and observational/deduction exercises. Please annotate candidates' answers by writing the letters c.e.t. on the appropriate place in the candidates' answers.
- **Oblique/forward slash**  
This indicates an acceptable alternative answer(s).
- **Brackets**  
Where an answer is given in the mark scheme and is followed by a word/words in brackets, this indicates that the information within the brackets is non-essential for awarding the mark(s).

- 1 Table [3]  
 Decimal places [2]  
 Average titre [2]  
 Titration consistency [1]

[8]

AVAILABLE  
MARKS

**NOTES**

**Table [3]**

The Table should be drawn as a table. It should be labelled with the following: initial burette reading, final burette reading, the titre, the rough and accurate values. It is not necessary to use exactly these words but there should be appropriate columns and rows [1]. Units, i.e.  $\text{cm}^3$ , should be stated in all columns (only penalise once) [1].

The rough titration value should be greater than the accurate values but not by more than  $2.0 \text{ cm}^3$ . Other errors are penalised [-1] for each. [1]

**Use of decimal places [2]**

All burette readings should be to at least one decimal place, each mistake is penalised by one mark.

(However initial burette readings of 0 are penalised once only.)

If used, the second decimal place position should be 0 or 5 only, other values will be penalised by 1 mark for each.

**Average titre [2]**

Accurate titrations only should be used. The use of a rough value is [-1].

The average value can be calculated to two decimal places or more, e.g. 25.17 and 25.18 average to 25.175.

If three accurate titres are recorded, then the average titre must be calculated using all three accurate titres.

Any error is [-1]. This might be an incorrect calculation or the omission of units. If the average titre is included in the table then the units indicated on the table apply.

**Titration consistency [1]**

This is the difference within the accurate titrations. If three accurate values are given then the difference between highest and lowest is used.

Difference	Mark
$\pm 0.2$	[1]
$> 0.2$	[0]

8

## 2 Observation

(a)

Test	Observations
<b>1</b> Place a spatula-measure of B in a test tube and heat strongly. Bubble any gas given off through limewater.	<i>Colourless liquid/water/white solid remains (on sides of test tube) [1]</i> <i>Limewater turns milky/cloudy [1]</i> [2]
<b>2</b> Make a solution of B by dissolving a half spatula measure of B in a test tube one third full of dilute hydrochloric acid.  Add 1 cm <sup>3</sup> of barium chloride solution to the test tube.	<i>Fizzing/effervescence/bubbles [1]</i>  <i>No change/colourless solution/no ppt formed [1]</i>
<b>3</b> Make a solution of B by dissolving a half spatula measure of B in a test tube one third full of deionised water.  Add 1 cm <sup>3</sup> of magnesium sulfate solution to the test tube.	<i>No change/colourless solution/no ppt formed [1]</i>
<b>4</b> Make a solution of B by dissolving a quarter spatula measure of B in a test tube one third full of dilute nitric acid.  Add 1 cm <sup>3</sup> of silver nitrate solution and then, in a fume cupboard, 1 cm <sup>3</sup> of concentrated ammonia solution.	<i>Yellow precipitate [1]</i> <i>Insoluble/no change [1]</i> [2]
<b>5</b> Dip a nichrome wire loop in concentrated hydrochloric acid; touch B with the wire and then hold it in a blue Bunsen flame.	<i>Yellow flame [1]</i>

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MARKS

(b)

	Test	Observations	
1	Place 1 cm <sup>3</sup> of C in a test tube and add 1 cm <sup>3</sup> of deionised water.	<i>Two layers formed/immiscible</i>	[1]
2	Place 10 drops of C on a watch glass placed on a heatproof mat and ignite it using a splint.	<i>Yellow/orange flame</i> [1] <i>Smoky/sooty flame</i> [1]	[2]
3	In a fume cupboard add approximately 0.5 cm <sup>3</sup> of C to a test tube one quarter full of bromine water and mix well.	<i>Orange/yellow/brown</i> [1] <i>to colourless</i> [1]	[2]
4	Place 1 cm <sup>3</sup> of C in a test tube. Add 2 cm <sup>3</sup> of potassium dichromate solution acidified by adding 2 cm <sup>3</sup> of dilute sulfuric acid. Warm the mixture gently, swirl and leave to stand for 5 minutes.	<i>Changes colour from orange to green</i>	[1]

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MARKS

14

Total

22