

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

Specimen for 2007

GCE A LEVEL

MARK SCHEME
MAXIMUM MARK: 30
SYLLABUS/COMPONENT: 9701/05 CHEMISTRY PRACTICAL

Page 2	Mark Scheme	Syllabus	Paper
	GCE A LEVEL – 2007	9701	5

Skill	Total marks	Approximate breakdown of marks		Question 1	Question 2
Planning	15 marks	Defining the problem	4 marks	4	0
		Methods	11 marks	11	0
Analysis, conclusions and evaluation	15 marks	Dealing with data	8 marks	0	8
		Evaluation	4 marks	0	4
		Conclusion	3 marks	0	3

PLAN = Planning

Problem = Defining the problem

Methods

ACE = Analysis, conclusions and evaluation

Data = Dealing with data

Evaluation

Conclusions

Question	Sections	Learning outcomes	Indicative material	mark
1	(a) (i)	PLAN Problem	• identify the independent variable in the experiment or investigation	temperature and size of marble chips 2
	(ii)		• identify the dependent variable in the experiment or investigation	volume or mass of CO ₂ 1
	(b)	PLAN Problem	• express the aim in terms of a prediction or hypothesis, and express this in words or in the form of a predicted graph	suitable hypothesis proposed e.g. rate of production of CO ₂ increases with increasing concentration of hydrochloric acid. 1

Page 3	Mark Scheme	Syllabus	Paper
	GCE A LEVEL – 2007	9701	5

	(c)	PLAN Methods	<ul style="list-style-type: none">• describe how the dependent variable is to be measured	appropriate apparatus to measure volume or mass of CO ₂ ;	1
			<ul style="list-style-type: none">• describe the arrangement of apparatus and the steps in the procedure to be followed	diagram showing appropriate apparatus and stepwise description including time measurement	1 1
			<ul style="list-style-type: none">• describe the method to be used to vary the independent variable, and the means to ensure that its value is measured accurately	appropriate volumes of acid and water;	1
			<ul style="list-style-type: none">• describe how each of the other key variables is to be controlled	use of appropriate apparatus in measuring volumes of acid and water;	1
			<ul style="list-style-type: none">• describe precautions that should be taken to keep risks to a minimum	control of temp and constant number and size of marble chips (e.g. same mass and number of chips)	1
			<ul style="list-style-type: none">• suggest appropriate volumes and concentrations of reagents	care when making up HCl from conc. HCl	1
				moles/mass of CaCO ₃ calculated;	1
				initial [HCl] calculated	1
					9 max 8
				(d)	PLAN Methods
<ul style="list-style-type: none">• describe how the data might be used in order to reach a conclusion	units correct	1			
	calculation of CO ₂ evolved, appropriate statement relating to hypothesis in (b)	1			
1 Total					15

© UCLES 2

Page 5	Mark Scheme	Syllabus	Paper
	GCE A LEVEL – 2007	9701	5

	(f)	ACE Conclusions	<ul style="list-style-type: none"> draw conclusions from an investigation, providing a detailed description of the key features of the data and analyses, and considering whether experimental data supports a given hypothesis 	makes appropriate comment on whether prediction is supported by data i.e. straight line graph	1
		ACE Evaluation	<ul style="list-style-type: none"> make informed judgements on the confidence with which conclusions may be drawn 	makes appropriate comment on whether procedure is suitable for determination of M_r	1
	(g)	ACE Conclusions	<ul style="list-style-type: none"> make further predictions, ask informed and relevant questions and suggest improvements 	suggests appropriate modification to experimental procedure such as more points in range where accuracy is greatest	1
	(h)	ACE Conclusions	<ul style="list-style-type: none"> make detailed scientific explanations of the data, analysis and conclusions that they have described make further predictions, ask informed and relevant questions and suggest improvements 	uses knowledge of acid/base chemistry to describe a more appropriate way of determining M_r such as titration.	1
2 Total					15