# UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Level

# MARK SCHEME for the November 2005 question paper

# 9701 CHEMISTRY

9701/05

Paper 5 (Practical Test), maximum raw mark 30

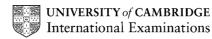
This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

• CIE will not enter into discussion or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the November 2005 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



Page 1	Mark Scheme	Syllabus	Paper
	A LEVEL – NOVEMBER 2005	9701	5

N.B. Boxes references within the mark scheme relate to the accompanying booklet of Standing Instructions.

### 1 Check and correct, if necessary, all subtractions in Tables 1.1 and 1.2.

### (b) Accuracy Marks

Calculate the average of the Supervisor's titres in Table 1.1. This value will be used as the standard for the second set of accuracy marks and should be recorded on the Supervisor's script and against Table 1.1 on each candidate script.

### Candidate consistency

Calculate the difference between the two closest titres in Table 1.1.

Award consistency marks as follows:

Mark	Difference/cm <sup>3</sup>
3	Up to 0.10
2	0.10+ to 0.20
1	0.20+ to 0.50
0	Greater than 0.50

## **Comparison to Supervisor**

Calculate the difference between the 'Supervisor Standard' and the closest of the Candidate values.

Award accuracy marks as follows:

Mark	Difference/cm <sup>3</sup>	
3	Up to 0.10	
2	0.10+ to 0.20	
1	0.20+ to 0.50	
0	Greater than 0.50	

[3]

[3]

(c) Give one mark if all final burette readings in Tables 1.1 and 1.2 are to 2 decimal places and in the correct place in the table. Do not give this mark if any burette reading (initial or final) is 'absurd' e.g. 9.67 cm<sup>3</sup>.

### Accuracy marks

Calculate the difference between the two closest titres in Table 1.2.

Award consistency marks as follows:

Mark	Difference/cm <sup>3</sup>	
2	Up to 0.20	
1	0.20+ to 0.50	
0	Greater than 0.50	

Pa	nge 2		Mark Scheme		Syllabus	Paper
		A LEV	EL – NOVEMBER 2005		9701	5
(d)	Give one	e mark for	$\frac{50}{1000} \times 0.20$			[1]
(e)	Give one	<b>mark</b> for	$\frac{\text{titre}}{1000} \times 0.1 \times 5$	for eacl	n flask	[1]
(f)	Give one	mark for	(answer (d) - answer (e))	for eacl	n flask	[1]
(g)	Give one	e mark for	answer to (e) $\times \frac{1000}{50}$	for eacl	n flask	[1]
(h)	Give <b>one</b> and	e mark for	answer to (f) x $\frac{1000}{20}$	for Flas	k <b>A</b>	
	Give one	e mark for	answer to (f) x $\frac{1000}{40}$	for Flas	k B	[2]
(i)	Give one	<b>mark</b> for evaluating	$K_{c} = \frac{[C_{2}H_{5}COOH(organic)]}{[C_{2}H_{5}COOH(aqueou)]}$	: layer)] s layer)]		

and

 $K_{c} = \frac{\sqrt{[C_{2}H_{5}COOH(organic layer)]}}{[C_{2}H_{5}COOH(aqueous layer)]}$ 

Give one mark for an appropriate conclusion, from results, as to correct equilibrium expression. [2]

(j)	Give one mark each for suitable reasons as to why the equilibrium expression is not constant	
	e.g. Not shaken for sufficient time to reach equilibrium. Variation in temperature between the two flasks.	[2]
(1.)	Cive and manyly for two notions of a sid from the amount lower/to the amount lower	<b>641</b>

(k) Give one mark for transfer of acid from the organic layer/to the aqueous layer. [1]

[Total for Question 1: 20 marks]

Page 3	Mark Scheme	Syllabus	Paper
	A LEVEL – NOVEMBER 2005	9701	5

## 2 Assessment of planning skills

#### **Outline Plan** (a)

Give **one mark** for mixing two pairs of solutions. Do **not** give this mark if all three pairs have been mixed. [1]

Give one mark for stating that an acid/alkali pair will have a (large) temperature rise but an acid/acid pair will have no (or minimal) temperature change. [1]

### Results

[1] Give **one mark** for a suitable tabulation of results including units. Give **one mark** if one (or two) pair(s) show a significant temperature rise and one pair has virtually no temperature change and [1]

FB 5 is identified as the solution containing sodium hydroxide.

Give one mark for using twice the volume of sodium hydroxide compared to sulphuric acid. (b) [1]

Give one mark for predicting that the temperature rise will be twice as great when 1.0 mol dm<sup>-3</sup> sulphuric acid is used. [1]

### Results

Give one mark for suitable tabulation of results. Do not penalise absence of units if already penalised in (a). Give one mark if initial temperatures are recorded for each solution. Give one mark if one pair has approximately twice the temperature rise of the other pair. [3]

# Identity

Give one mark if the solutions are correctly identified. **FB 3** is 0.05 mol dm<sup>-3</sup> H<sub>2</sub>SO<sup>4</sup> **FB 4** is 1.00 mol dm<sup>-3</sup>  $H_2^{-}SO^4$ **FB 5** is 1.00 mol dm<sup>-3</sup> NaOH

[Total for Question 2: 10 marks]

[Total for Paper: 30 marks]