Cambridge International Examinations
Cambridge Ordinary Level

CHEMISTRY **5070/32**

Paper 3 Practical Test **October/November 2016**

MARK SCHEME

Maximum Mark: 40

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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Question	Answer	Marks	Guidance
1(a)	**Titration** **Measurements (1)** Both readings i.e. initial and final are present for each titration and readings are recorded to 1dp. **Titres (1)** All the titres are calculated correctly i.e. no subtraction errors. **Accuracy (6)** For the two best titres give: 3 marks for a titre within 0.2 cm^3 of the Supervisor's value. 2 marks for a titre within 0.3 cm^3 of the Supervisor's value. 1 mark for a titre within 0.4 cm^3 of the Supervisor's value. **Concordance (3)** Give 3 marks if all the ticked values are within 0.2 cm^3. Give 2 marks if all the ticked values are within 0.3 cm^3. Give 1 marks if all the ticked values are within 0.4 cm^3. **Average (1)** Give 1 mark for calculating the correct average of selected titres.	**12**	**Reject** final readings in excess of 50.0 **Reject** initial readings of 50 Accuracy marks are awarded using the candidate's correct values. Concordance marks are awarded using the uncorrected titres.
1(b)	Assuming a pipette volume of 25 cm^3 and the average volume of **Q** used = 24.8 cm^3: Mole of potassium manganate(VII) in the average volume $= (24.8 \times 0.0200) / 1000$ $= 0.000496$	**1**	
1(c)	Answer from (b) $\times 5$ $= 0.000496 \times 5$ $= 0.00248$	**1**	

Question	Answer	Marks	Guidance
1(d)	Answer from (c) × 500 / 25 (or 20) = 0.00248 × 500 / 25 = 0.0496	1	
1(e)	Answer from (d) × 56 = 0.0496 × 56 = 2.78 g	1	
1(f)	Answer from (e) × 100 / 3.12 = 2.78 × 100 / 3.12 = 89.1%	1	

Question	Answer	Mark	Guidance
Question 2 General points **R** is nitric acid **S** is zinc carbonate For ppt: **accept** solid / suspension / powder but **ignore** substance / particles / deposit / residue / sediment / gelatinous / insoluble **Ignore** cloudy / milky / white / gelatinous solution for ppt forms but **accept** cloudy / milky / white / gelatinous solution for ppt remains **Ignore** solution / ppt turns colourless for ppt dissolves but **accept** clears for ppt dissolves For gases: to gain credit for the name of the gas produced, the test must be at least partially correct. For the evolution of a gas in a liquid **accept** the observation effervescence / bubbles / fizz / gas vigorously evolved but **ignore** gas evolved. Solutions: colourless is **not** equivalent to clear and clear is **not** equivalent to colourless Marks awarded for conclusions are dependent on correct evidence.			
2(test 1)	(a) solution turns red (1) (b) solution turns yellow (1)	**19**	
2(test 2)	gas turns damp red litmus blue (1) ammonia (1)		To score ammonia mark there must be an indication of a test i.e. smell of ammonia, alkaline gas, tested with litmus
2(test 3)	(a) solution turns yellow (1) (b) solution turns blue or black (1)		
2(test 4)	solid disappears or dissolves (1) solution turns blue (1)		
2(test 5)	bubbles (1) gas turns limewater milky (1) carbon dioxide (1) **Allow** solid disappears or dissolves to score 1 if mark not awarded in test 4.		To score carbon dioxide mark there must be an indication of a test i.e. tested with limewater.

2(test 6)	white ppt (1) soluble in excess (1) colourless solution (1)		
2(test 7)	white ppt (1) soluble in excess (1) colourless solution (1)		
2(test 8)	gas turns damp red litmus blue (1) ammonia (1) **Allow** the marks for the test and identification of carbon dioxide if not awarded in test 5.		To score ammonia mark there must be an indication of a test – see test 2.
Conclusions	Cation in **R** is H^+ (1) Anion in **R** is NO_3^- (1) Cation in **S** is Zn^{2+} (1) Anion in **S** is CO_3^{2-} (1)	**4**	Evidence: Test 1(a) red with methyl orange Test 2 alkaline gas/ammonia In both tests 6 & 7 white ppt which dissolves Carbon dioxide identified in test 5 or test 8