Cambridge
O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

CHEMISTRY **5070/32**

Paper 3 Practical Test **October/November 2017**

MARK SCHEME

Maximum Mark: 40

Published

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Question	Answer	Marks
1(a)	**Titration** **Measurements (1)** Both readings i.e. initial and final are present for each titration, readings are recorded to 1dp, no reading is in excess of 50.0 and no initial reading is given as 50.0 **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 if the candidate calculates a correct average of selected titres	**12**
1(b)	Pipette volume = 25 cm^3 and assuming average volume of **P** used = 20.4 cm^3 Concentration of sulfuric acid in **P** in mol/dm^3 = (25.0 × 0.586) / (20.4 × 2) (1) = 0.359 (1)	**2**
1(c)	Moles of sulfuric acid in 10 cm^3 of concentrated acid = **(b)** / 2 = 0.359 / 2 = 0.180	**1**
1(d)	Concentration of concentrated sulfuric acid in mol/dm^3 = **(c)** × 100 = 0.180 × 100 = 18.0	**1**
1(e)	Mass of sulfuric acid in 1 dm^3 of concentrated sulfuric acid in g = **(d)** × 98 = 18.0 × 98 = 1760	**1**

Question	Answer	Marks
General points **R** is aluminium chloride **S** is copper(II) chloride For gases: to gain credit for the name of the gas produced, the test must be at least partially correct. Solutions: colourless is not equivalent to clear and clear is not equivalent to colourless No credit is given for conclusions based upon incorrect observations.		
2 **R** (test 1)	(a) white ppt (1) (b) (ppt) dissolves / soluble (in excess) (1) colourless solution (1)	**21**
2 **R** (test 2)	(a) white ppt (1) (b) (ppt) remains / insoluble (in excess) (1) (c) no reaction (1)	
2 **R** (test 3)	(a) no reaction (1) (b) no reaction (1) (c) white ppt (1)	
2 **S** (test 1)	(a) blue ppt (1) (b) (ppt) remains / insoluble (in excess) (1)	
2 **S** (test 2)	(a) blue ppt (1) (b) (ppt) dissolves / soluble (in excess) (1) dark blue solution (1) (c) bubbles (1) gas relights a glowing splint (1) oxygen (1) (liquid) turns darker (1)	
2 **S** (test 3)	(a) no reaction (1) (b) no reaction (1) (c) white ppt (1)	

Question	Answer	Marks
Conclusions	**R** is aluminium chloride / $AlCl_3$ / Al^{3+} Cl^- (1) Evidence: Test 1 white ppt which dissolves in excess, Test 2 white ppt which does not dissolve in excess and Test 3 correct in (a),(b) and (c) **S** is copper(II) chloride / $CuCl_2$ / Cu^{2+} Cl^- (1) Evidence: Test 1 blue ppt which does not dissolve in excess, Test 2 blue ppt which dissolves in excess and Test 3 correct in (a), (b) and (c)	**2**