Cambridge O Level

Cambridge Assessment International Education
Cambridge Ordinary Level

CHEMISTRY **5070/31**

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 1 dp, 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 = 25.3 cm^3 Concentration of nitric acid in **P** in mol / dm^3 = (25.0 × 0.153 × 2) / 25.3 (1) = 0.302 (1)	**2**
1(c)	Moles of nitric acid in 10 cm^3 of concentrated acid = **(b)** / 2 (1) = 0.302 / 2 = 0.151	**1**
1(d)	Concentration of concentrated nitric acid in mol / dm^3 = **(c)** × 100 (1) = 0.151 × 100 = 15.1	**1**
1(e)	Mass of nitric acid in 1 dm^3 of concentrated nitric acid in g = **(d)** × 63 (1) = 15.1 × 63 = 951	**1**

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Question	Answer	Marks
General points **R** is zinc sulfate **S** is iron(II) sulfate 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) dissolves / soluble (in excess) (1) colourless solution (1) (c) no reaction (1)	
2 **R** (test 3)	(a) no reaction (1) (b) white ppt (1) (c) no reaction (1)	
2 **S** (test 1)	(a) green ppt (1) (b) insoluble in excess (1)	
2 **S** (test 2)	(a) green ppt (1) (b) insoluble in excess (1) (c) bubbles (1) gas relights a glowing splint (1) oxygen (1) red/brown (solid) (1)	
2 **S** (test 3)	(a) no reaction (1) (b) white ppt (1) (c) no reaction (1)	

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Question	Answer	Marks
Conclusions	**R** is zinc sulfate / $ZnSO_4$ / Zn^{2+} $SO4^{2-}$ (1) Evidence: Tests 1 and 2 white ppt which dissolves in excess and Test 3 correct in (a), (b) and (c) **S** is iron(II) sulfate / $FeSO_4$ / Fe^{2+} $SO4^{2-}$(1) Evidence:Tests 1 and 2 green ppt insoluble in excess and Test 3 correct in (a), (b) and (c)	**2**

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