



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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This document consists of **4** printed pages.

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 0.2cm^3 of the Supervisor's value 2 marks for a titre within 0.3cm^3 of the Supervisor's value 1 mark for a titre within 0.4cm^3 of the Supervisor's value Concordance (3) Give 3 marks if all the ticked values are within 0.2cm^3 Give 2 marks if all the ticked values are within 0.3cm^3 Give 1 marks if all the ticked values are within 0.4cm^3 Average (1) Give 1 mark if the candidate calculates a correct average of selected titres	12
1(b)	Pipette volume 25cm^3 and assuming average volume of P used = 25.3cm^3 Concentration of nitric acid in P in mol/dm^3 $= (25.0 \times 0.153 \times 2) / 25.3 \text{ (1)}$ $= 0.302 \text{ (1)}$	2
1(c)	Moles of nitric acid in 10cm^3 of concentrated acid $= (\mathbf{b}) / 2 \text{ (1)}$ $= 0.302 / 2$ $= 0.151$	1
1(d)	Concentration of concentrated nitric acid in mol/dm^3 $= (\mathbf{c}) \times 100 \text{ (1)}$ $= 0.151 \times 100$ $= 15.1$	1
1(e)	Mass of nitric acid in 1dm^3 of concentrated nitric acid in g $= (\mathbf{d}) \times 63 \text{ (1)}$ $= 15.1 \times 63$ $= 951$	1

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)	

Question	Answer	Marks
Conclusions	R is zinc sulfate / ZnSO_4 / $\text{Zn}^{2+} \text{SO}_4^{2-}$ (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 / $\text{Fe}^{2+} \text{SO}_4^{2-}$ (1) Evidence: Tests 1 and 2 green ppt insoluble in excess and Test 3 correct in (a), (b) and (c)	2