

**2012 Secondary Three
Block Test 1 (Chemistry)**

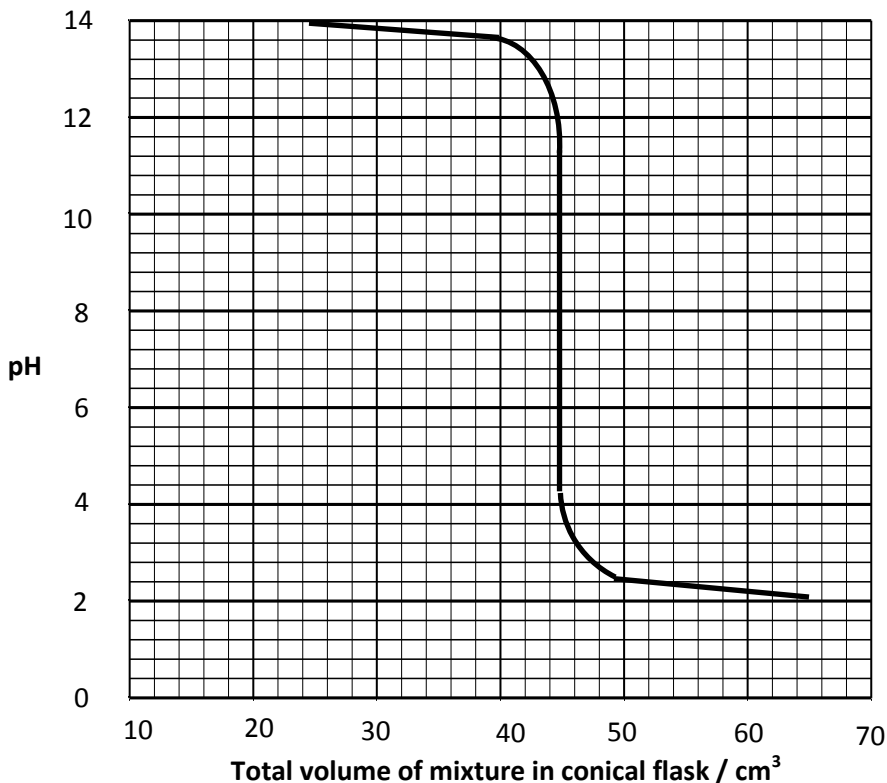
Marking Scheme

Section A

1	C	6	D	11	A
2	B	7	C	12	B
3	A	8	A	13	C
4	A	9	B	14	B
5	A	10	B	15	B

Section B & C

No	Answers	Marks
B1		
(a)	L: copper(II) nitrate Reject: copper nitrate M: ammonia	[1] [1]
(b)	N: carbon dioxide O: iron(III) carbonate Reject: iron carbonate	[1] [1]
(c)	P: potassium carbonate	[1]
	If answers are in chemical formula, minus one mark for whole question.	
B2(a)		
(i)	$2\text{Al(s)} + 6\text{H}^+(\text{aq}) \rightarrow 2\text{Al}^{3+}(\text{aq}) + 3\text{H}_2(\text{g})$ Deduct [1] mark for incorrect state symbols. Any other error will be awarded 0 mark.	[2]
(ii)	White ppt [1] soluble in excess aqueous NaOH [1] to give a colourless solution.	[2]
(iii)	Add aqueous NaOH and aluminum powder to X and heat mixture. [1] A colourless pungent gas [1] that turns moist red litmus blue will	[3]

No	Answers	Marks
	be produced. [1]	
(b)	Not valid. [1] Solutions containing Ag^+ can also form white precipitate with carbonate and hydroxide ions. [1]	[2]
B3(a)		
(i)	Dilute nitric acid	[1]
(ii)	10.0cm ³	[1]
(b)	 Correct starting pH (14) [1] Correct pH after end point (2) [1] Correct total volume at neutralization (45cm³) [1]	[3]
(c)	Phenolphthalein	[1]
C(a)		
(i)	Any two of the following (1 mark each) 1. The student did not filter the mixture after Step 2 to remove the excess carbonate.	

No	Answers	Marks
	OR The student should collect the filtrate and heat the filtrate in Step 3. 2. The student did not heat the solution to saturation OR Student did not test for saturation using glass rod. 3. The student should have wash the crystals with deionized water and dry them between filter paper. 4. The student should let the heated solution cool and crystallize instead of filtering immediately.	
(ii)	Any soluble salt except sodium, potassium and ammonium salts.	[1]
(iii)	Correct acid with reference to a(ii) [1] Correct carbonate with reference to a(ii) [1]	[2]
(b)		
(i)	No [1] Explanation: Any excess insoluble calcium carbonate added cannot be separated from the insoluble calcium sulfate product. [1] Insoluble calcium sulfate formed will coat around un reacted calcium carbonate, preventing further reaction with acid, resulting in a low yield. [1] *Ionic precipitation should be used. [1] *Only award mark for this point if there is at least one explanation given. Maximum mark for this question is 3 marks.	[3]
(ii)	Any precipitation reaction using a soluble calcium compound and a soluble sulfate that will give calcium sulfate and one other soluble product. OR Reaction using aqueous $\text{Ca}(\text{OH})_2$ and sulfuric acid.	[2]

No	Answers	Marks
	$\text{Ca(OH)}_2(\text{aq}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow \text{CaSO}_4(\text{s}) + 2\text{H}_2\text{O}(\text{l})$ Deduct [1] mark for incorrect state symbols. Any other error will be awarded 0 mark.	

END OF MARKING SCHEME