

# TESTS FOR GASES, CATIONS AND ANIONS 1

## MARK SCHEME

Q1.

Question	Answers	Extra information	Mark
(a)(i)	yellow		1
(ii)	lilac		1
(b)	(bubble through) limewater		1
	Cloudy	allow white / milky	1
(c)(i)	silver nitrate solution		1
(ii)	white		1
(d)(i)	place sample in flame	accept flame test accept any workable method allow burn ignore heat	1
	sodium: yellow (flame) potassium: lilac (flame)	allow orange allow purple	1 1
(ii)	(lilac) colour (of potassium) obscured by (yellow) colour of sodium	allow difficult to see two colours allow sodium colour is brighter allow colours mix	1
(e)	acidify (with nitric acid)	do not accept if acidified with anything other than nitric acid	1
	add silver nitrate (solution) white precipitate		1
		depends on second marking point allow white solid ignore silver chloride ignore solution goes cloudy / milky	1
(f)(i)	add excess (sodium hydroxide)	allow add sodium hydroxide	1
	aluminium (ions / hydroxide) (re)dissolve	depends on first marking point allow if aluminium, (white) precipitate / solid dissolves  allow magnesium (ions / hydroxide) do not (re)dissolve	1
(f)(ii)	place sample in flame	accept flame test accept any workable method	1

	flame does not go red	allow burn ignore heat accept calcium (ions / hydroxide would produce) red flame allow magnesium (ions / hydroxide) (produce) no flame colour	1
Total			17

**Q2.**

Question	Answers	Extra information	Mark
(a)	stop them reacting		1
(b)(i)	fizzing / bubbles / effervescence		1
(ii)	(g)		1
(iii)	limewater		1
(c)	yellow		1
(d)(i)	barium chloride		1
(ii)	white		1
(iii)	e.g. don't see what is being bought or a comment about quality / purity e.g. may be impure / contaminated	ignore references to cost	1
Total			8

**Q3.**

Question	Answers	Extra information	Mark
(a)	limewater / calcium hydroxide		1
	(limewater) goes milky / cloudy or gives white precipitate / solid	do <b>not</b> allow this mark if lime water added to solution or powder	1
(b)	e.g. flame colour of (Na) and flame colour of (K) interfere / mask / mix with each other	accept difficult to determine the colour or hard to distinguish accept some indication that two distinct colours are not seen	1
(c)(i)	barium chloride	ignore mention of acidification	1

	(solution) / BaCl <sub>2</sub>  white precipitate / white solid	do not allow sulfuric acid. wrong reagent = no mark  allow white barium sulfate or barium sulfate precipitate	1
(ii)	white precipitate / white solid	ignore goes milky  do not accept any mention of precipitate dissolving	1
Total			6

**Q4.**

Question	Answers	Extra information	Mark
(a)(i)	sodium hydroxide		1
	green		1
	solid		1
(ii)	barium chloride		1
	white		1
	sulfate ions, SO <sub>4</sub> <sup>2-</sup>		1
(b)	some indication of contact between (colourless) flame and the chemical	ignore colour of flame	1
(c)	any one from: • accurate • precise • sensitive • reliable • rapid • only small amount needed	ignore reference to cost / safer	1
Total			8