AQA GCSE Science Combined Foundation

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	protons neutrons		1 1	AO1 5.1.1.5
01.2	elements were missing elements were in the wrong place		1 1	AO1 5.1.2.2
01.3	left gaps for elements he predicted were still to be discovered swapped the order of some elements to group the elements by their chemical properties		1 1	AO1 5.1.2.2
01.4	atomic protons		1 1	AO2 5.1.2.2
02.1	Q		1	AO2 5.1.2.1
02.2	R because its outer electron shell/highest energy level is full/atoms have stable arrangements of electrons		1 1	AO2 5.1.2.4
02.3	P and S	both required for the mark	1	AO2 5.1.2.1
03.1	Group 0 – Noble Gases Group 1 – Alkali Metals Group 7 – Halogens	one mark for one correct two marks for all correct	2	AO1 5.1.2.4 5.1.2.5 5.1.2.6

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03.2	2,8,8	one mark for eight electrons in outermost shell one mark for 2,8 in inner shells	2	AO2 5.1.2.4
03.3	stable arrangement of electrons/full outer shell of electrons		1	AO1 5.1.2.4
03.4	2,8,1		1	AO1 5.1.2.5
03.5	sodium oxide		1	AO1 5.1.2.5
03.6	more reactive		1	AO2 5.1.2.5
03.7	argon has a higher atomic mass than potassium, so potassium and argon would be swapped however, then potassium and argon would not share the properties of the other elements in their group/argon has a lower atomic number than potassium		1 1	AO2 5.1.2.1
04.1	seven		1	AO1 5.2.1.6
04.2	fluorine		1	AO1 5.1.2.6

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04.3	hydrogen bromide – middle sodium chloride – top		1 1	AO2 5.1.2.6 5.2.1.2 5.2.1.4
04.4	displacement reaction no displacement reaction no displacement reaction		1 1 1	AO2 5.1.2.6
05.1	metals		1	AO1 5.1.2.5
05.2	lithium < sodium < potassium < rubidium < caesium	one mark for one correct, two mark for three correct, three marks for all correct	3	AO1 5.1.2.5
05.3	sodium + chlorine – sodium chloride sodium + water – sodium hydroxide + hydrogen sodium + oxide – sodium oxide		1 1 1	AO2 5.1.2.5
05.4	to stop them reacting with the oxygen or water in the air		1	AO3 5.1.2.5
05.5	dull grey appearance is sodium oxide because sodium has reacted with oxygen (in the air)/tarnishes metal is soft and easy to cut as it is a pure metal the inside is shiny are it is pure metal and has not had the chance to react with oxygen		1 1 1 1 1	AO2 5.1.2.5

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05.6	**Level 3:** Observations are detailed and accurate. The writing is clear, coherent and logical and comparisons are clearly made.		5-6	AO3 5.1.2.5
	Level 2: Observations generally correct, although may lack detail. The writing is mainly clear, although the structure may lack logic and comparisons are not always clear		3-4	
	Level 1: Some correct observations. The writing lacks clarity, coherence and logic, and the comparisons are not clearly expressed.		1-2	
	No relevant content.		0	
	Indicative content • universal indicator would change colour to purple • as solution becomes more alkali • because potassium hydroxide is produced • metal would 'fizz' or whizz around • as the hydrogen gas was released • flames would be seen • exothermic reaction/give off energy • potassium would 'disappear' • as it reacted to form potassium hydroxide			
06.1	non-metal right of the periodic table		1 1	AO1 5.1.2.3

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06.2	eight		1	AO1 5.1.2.4
06.3	helium < neon < argon < radon	one mark for two correct	2	AO1 5.1.2.4
07.1	metal		1	AO1 5.1.2.3
07.2	rubidium hydroxide and hydrogen		1	AO2 5.1.2.5
07.3	rubidium + oxygen → rubidium oxide		1	AO1 5.1.2.5
07.4	$2Na(s) + Br_2(l) \rightarrow 2NaBr(s)$	one mark for balancing one mark for state symbols	2	AO2 5.1.2.5
07.5	rubidium is more reactive than sodium because it is further down Group 1 outer electron is further from the nucleus so easier to transfer to chlorine/easier to remove		1 1 1 1	AO1 5.1.2.5
08.1	+2		1	AO2

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Question	Answers	Extra information	Mark	AO / Specification reference
08.2	magnesium ion has the electron arrangement: 2,8 (drawn as dots/crosses) magnesium should be in square brackets with a 2+ positive charge there should be 2 chlorine ions, with the electron arrangement 2,8,7 (drawn as crosses/dots) each should have one additional electron from magnesium (drawn as a dot/cross) chlorine should be in square brackets with a 1– charge, and a subscript 2 to represent Cl_2	one mark for magnesium one mark for chlorine one mark for charges and two chlorine atoms	3	AO2
08.3	strontium will be more reactive than magnesium in strontium, the outer shell is further from the nucleus than in magnesium so easier to remove the 2 outer electrons		1 1 1	AO3 5.1.2.5
08.4	sodium will be more reactive only needs to lose one electron, compared to magnesium which needs to lose two		1 1	AO3 5.1.2.5

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Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
09.1	potassium ion has the electron arrangement: 2,8,8 (drawn as dots/crosses) potassium should be in square brackets with a 1+ positive charge bromine ion has the electron arrangement 2,8,8,7 (drawn as crosses/dots) with an additional electron from potassium (drawn as a dot/cross) bromine should be in square brackets with a 1– charge	one mark for potassium one mark for bromine one mark for charges	3	AO2 5.1.2.5 5.1.2.6
09.2	B potassium chloride bromine		1 1	AO2 5.1.2.6
09.3	Group 1 reactivity increases as you go down the group atoms have to lose 1 electron to achieve stable electron arrange/eight electrons in the outer shell outer electron is further from nucleus, so easier to remove Group 7 reactivity decreases as you go down the group atoms have to gain one electron to achieve stable electron arrange/eight electrons in the outer shell outer shell further from the nucleus, so harder to attract/further from positive charge of the nucleus		1 1 1 1 1 1	AO1 5.1.2.5 5.1.2.6
09.4	sodium + water → sodium hydroxide + hydrogen	one mark for reactants, one mark for products	2	AO2 5.1.2.5

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Question	Answers	Extra information	Mark	AO / Specification reference
10.1	Group 0 – inert Group 1 – react with water to make alkaline solutions Group 7 – react with metals to make ionic compounds		1 1 1	AO1 5.1.2.4 5.1.2.5 5.1.2.6
10.2	Group 1 gets more reactive down the group Group 1 loses outer electron to form full outer shell/nearest Noble Gas electron is further from the nucleus, so becomes easier to remove Group 7 gets less reactive down the group Group7 atoms gain electron to form full outer shell/nearest Noble Gas less attraction felt by positive nucleus charge further away from nucleus		1 1 1 1 1 1	AO2 5.1.2.5 5.1.2.6
10.3	inert atoms already have full outer electron shell		1 1	AO1 5.1.2.4
11.1	Alkali Metals		1	AO1 5.1.2.6
11.2	they have the number of electrons in the shell furthest from the nucleus		1	AO1 5.1.2.1
11.3	caesium bromide		1	AO2 5.1.2.5 5.1.2.6

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12.1	iron		1	AO1 5.1.2.3
12.2	harder distorted slide over		1 1 1	AO1 5.2.2.7
12.3	strong metallic bonds lots of energy needed to overcome them		1 1	AO2 5.2.2.7