

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	neutron – 0 proton – +1 electron – -1		1 1 1	AO1 5.1.1.4
01.2	0		1	AO2 5.1.1.4
01.3	ion		1	AO2 5.1.1.4
01.4	one mark for two inner electrons one mark for four outer electrons		2	AO2 5.1.1.7
01.5	carbon		1	AO2 5.1.1.4
01.6	protons, neutrons		1	AO1 5.1.1.4
01.7	14 protons positive 14 neutrons neutral 14 electrons negative		1 1	AO1 5.1.1.4
02.1	filtration		1	AO2 5.1.1.2
02.2	in filter paper		1	AO2 5.1.1.2

Question	Answers	Extra information	Mark	AO / Specification reference
02.3	evaporation		1	AO2 5.1.1.2
03.1	Niels Bohr – electrons orbit the nucleus at certain distances James Chadwick – the nucleus contains neutrons		1 1	AO1 5.1.1.3
03.2	alpha particles/helium nuclei fired at gold foil most passed through the gold foil so most of the atom is empty space a small number bounced back so must have collided with something/mass/nucleus a small number passed through but were deflected/had their direction changed positively charged alpha particles passed near positively charged nucleus and were repelled		1 1 1 1 1 1	AO1 5.1.1.3
03.3	have no charge			
03.4	Level 3: The comparisons are detailed and accurate. The writing is clear, coherent and logical and comparisons are clearly made.		5–6	AO3 5.1.1.3
	Level 2: The comparisons are 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 comparisons are correct. The writing lacks clarity, coherence and logic, and the comparisons are not clearly expressed.		1–2	
	No Relevant content		0	

Question	Answers	Extra information	Mark	AO / Specification reference
	Indicative content <ul style="list-style-type: none"> • both have electrons • both have positive parts • plum pudding model has electrons all over the place whereas nuclear model has electrons in distinct shells • plum pudding is positive all over whereas nuclear model has a positive centre • nuclear model has a nucleus whereas plum pudding model does not • nuclear model shows electrons within different energy levels • nuclear model has neutrons whereas plum pudding does not 			
04.1	CO ₂		1	AO2 5.1.1.1
04.2	hydrogen oxygen sulfur		1 1 1	AO2 5.1.1.1
04.3	3		1	5.1.1.1
05.1	16 x 4 = 64 63.5 + 64 = 127.5 159.5 - 127.5 = 32		1 1 1	AO2 5.1.1.5
05.2	sulfur		1	AO2 5.1.1.1
05.3	16 - 8 = 8		1	AO1 5.1.1.5

Question	Answers	Extra information	Mark	AO / Specification reference
05.4	copper has multiple isotopes relative atomic mass is an average value of the percentage of the isotopes of the element		1 1	AO1 5.1.1.6
06.1	triangle		1	AO2 5.1.1.1
06.2	A		1	AO2 5.1.1.1
06.3	C		1	AO2 5.1.1.1 5.1.1.2
06.4	D		1	AO2 5.1.1.1 5.1.1.2
06.5	NaCl or ClNa		1	AO2 5.1.1.1
07.1	lowest innermost two		1 1 1	AO1 5.1.1.7
07.2	sodium		1	AO2 5.1.1.7

Question	Answers	Extra information	Mark	AO / Specification reference
07.3	two electrons on innermost shell six electrons on second shell		1 1	AO2 5.1.1.7
08.1	same number of protons but a different number of neutrons		1	AO1 5.1.1.6
08.2	both have five electrons both have five protons boron-10 has five neutrons whereas boron-11 has six neutrons		1 1 1	AO1 5.1.1.6
08.3	$\frac{(80 \times 11) + (20 \times 10)}{100}$ $= \frac{880 + 200}{100}$ $= 10.8$		1 1 1	AO2 5.1.1.6
09.1	filtration		1	AO1 5.1.1.2
09.2	Level 3: A full description of the method provided, with at least two pieces of equipment named.		5-6	AO1 5.1.1.2
	Level 2: Basic method provided, identifying that the water needs to evaporate (either by heating or by being left). At least one piece of equipment identified.		3-4	
	Level 1: Method identifies idea that water needs to evaporate/be heated. No equipment named.		1-2	

Question	Answers	Extra information	Mark	AO / Specification reference
	Level 0: No relevant content Indicative content <ul style="list-style-type: none"> • mixture placed in evaporating dish • evaporating dish placed on beaker half-full of water • place beaker/evaporating dish on tripod and gauze • heat the mixture/water • using Bunsen burner • until crystals start to form • remove mixture from the heat • leave for the rest of the water to evaporate 		0	
09.3	chromatography		1	AO1 5.1.1.2
10.1	has atoms of two or more elements chemically bonded together		1	AO1 5.1.1.2
10.2	compound – middle image element – top image mixture – bottom image	one mark for one or two correct 2 marks for all correct	2	AO1 5.1.1.2
10.3	stage one – filtration stage two – (fractional) distillation		1 1	AO2 5.1.1.2

Question	Answers	Extra information	Mark	AO / Specification reference
10.4	A – beaker B – filter paper C – funnel D – conical flask		1 1 1 1	AO2 5.1.1.2