

Question	Answer	Marks	AO Element	Notes	Guidance
1	C	1			
2	A - X ₂ Y	1			
3	electron	1			
4	D / calcium oxide / CaO	1			
5(a)	U	1			
5(b)	T	1			
5(c)	S	1			
5(d)	R	1			
6	sodium chloride	1			
7	A sodium atom loses an electron.	1			second box down ticked
8	electron	1			
9	D	1			
10	C	1			

Question	Answer	Marks	AO Element	Notes	Guidance
11	B	1			
12	C	1			
13	1 pair of bonding electrons between each H and the C atom (1) no additional outer shell electrons on the H or C atoms (1)	2			
14	1 pair of electrons between each O and H (1) 4 non-bonding electrons on oxygen and none on the hydrogens (1)	2			
15	atoms of two or more (different) elements chemically combined / bonded	1			
16	C / iron / Fe	1			

Question	Answer	Marks	AO Element	Notes	Guidance
17	any two from: <ul style="list-style-type: none"> • components / parts / substances in it can be separated (by physical means) • chemical properties of components / parts / substances do not change (when mixed) • variable composition / substances present can be mixed in different quantities 	2			
18	layers can slide (over each other)	1			
19	B / NaCl / sodium chloride	1			
20(a)	<i>any two from:</i> diamond / graphite / graphene	1			
20(b)	carbon monoxide	1			
21	silicon(IV) oxide	1			
22	bonding pair of electrons between each C and H and no other electrons on hydrogen or outer shell of carbon	1			

Question	Answer	Marks	AO Element	Notes	Guidance
23(a)	chlorine / argon	1			
23(b)	sodium	1			
23(c)	argon	1			
23(d)	sulfur	1			
23(e)	aluminium	1			
23(f)	silicon	1			
23(g)	chlorine	1			
24	T	1			
25	R	1			
26	high melting point or high boiling point dissolve in water conduct (electricity) when molten or conduct (electricity) in aqueous solution	3			

Question	Answer	Marks	AO Element	Notes	Guidance
27(a)	One mark for any 2 of: <ul style="list-style-type: none"> • helium • hydrogen • nitrogen 	1			
27(b)	(substance) containing only one type of atom / (substance) which cannot be broken down chemically into any other substance	1			
28	(stainless steel / it) is more resistant to corrosion (than pure metal)	1			
29(a)	(molecules) made up of two atoms	1			
29(b)	shared pair of electrons (between two atoms)	1			
30	(substance containing) two (or more) types of atom bonded / two (or more) types of atom joined / two (or more) types of atoms chemically combined	1			

Question	Answer	Marks	AO Element	Notes	Guidance
31	bonding pair of electrons between H and Cl (1) 6 non-bonding electrons on the Cl and none on the H (1)	2			
32	C ₄ H ₁₀ is covalent (1) KF is ionic (1)	2			
33	silicon/Si	1			
34	(ionic): made of, positive and negative ions / anions and cations / oppositely charged ions / unlike charged ions / different charged ions (1) (lattice): regular / sequence / pattern / alternating / repeated / framework / ordered / organised / network / uniform (1)	2			
35(a)	E / oxygen / O ₂	1			
35(b)	A / sodium bromide / NaBr	1			
35(c)	E / oxygen / O ₂	1			

Question	Answer	Marks	AO Element	Notes	Guidance
36	any 3 from: <ul style="list-style-type: none"> • metals conduct electricity / heat ORA • metals are malleable ORA • metals are ductile ORA • metals are sonorous / ring when hit ORA • metals are shiny / lustrous ORA 	3			
37(a)	<i>electrical conductivity of zinc:</i> conducts (1) <i>solubility in water of sodium chloride:</i> soluble (1)	2			
37(b)	low boiling point / does not conduct when solid or molten	1			
37(c)	does not conduct when solid but conducts when molten	2		IF full credit is not awarded, allow 1 mark for conducts when molten	

- Mark Scheme

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Question	Answer	Marks	AO Element	Notes	Guidance
38	substance containing only one type of atom / substance containing atoms (each) with the same number of protons / substance which cannot be broken down further by chemical means	1			
39	labels 'C' and 'H' in the correct circles and no non-bonding electrons or extra bonding electrons (1) one pair of electrons in each overlap area (1)	2			
40	B	1			
					[Total: 69]