

Chapter 5 – The Periodic Table

Question	Answers	Extra information	Mark
1(a)	dull – non-metal ductile – metal good electrical conductor – metal brittle – non-metal		1 1 1 1
(b)	aluminium		1
2(a)	group – a column in the table period – a row in the table left of the stepped line – location of the metals right of the stepped line – location of the non-metals	2 marks for two correctly matched 1 mark for one correctly matched	3
(b)	Mendeleev		1
3	low soft down		1 1 1
4(a)	Group 7		1
(b)	chlorine – pale green – gas bromine – red-brown – liquid iodine – dark grey – solid		1 1 1
5(a)	melting points increase as you move down the group		1
(b)	any value above 184 °C		1
(c)	low melting point/low boiling point/electrical insulator	Accept any other property of a non-metal	1
6(a)	the elements will react readily/vigorously/easily/quickly with other chemical substances		1
(b)	iron + chlorine → iron chloride	1 mark for each term Ignore the order of iron and chlorine	3

Question	Answers	Extra information	Mark
(c)	slower reaction/less vigorous		1
(d)	iron iodide		1
7(a)	Group 2		1
(b)	Na/Mg/Al/Si/P/S/Ar	Accept chemical name as an alternative to the chemical symbol	1
(c)	Li/Na/Rb/Cs		1
(d)	Cl/F		1
8(a)i	5		1
(a)ii	2/5		1
(a)iii	3 and 6	Both required for 1 mark	1
(b)	hydrogen		1
9(a)	helium/neon/argon/krypton/xenon/radon		1
(b)	unreactive/inert		1
(c)i	1.8 kg/m ³		1
(c)ii	density increases as you go down the group/as the atomic number/mass number increases	Accept converse	1 1
(c)iii	any value between 3.8 kg/m ³ and 10.0 kg/m ³	1 mark for value 1 mark for kg/m ³	2

Question	Answers	Extra information	Mark
10	<p>Group 1 properties: For example: soft/shiny when cut/good conductors of electricity/react with water to release hydrogen/produce a metal hydroxide</p> <p>Group 7 properties: For example: do not conduct electricity/react with iron to form iron halides/named halide/low melting points</p> <p>Comparison examples: Group 1 are metals, whereas Group 7 are non-metals Group 1 are conductors, whereas Group 7 are insulators Group 1 decrease in melting point/boiling point as you go down the group, whereas Group 7 increase in melting point/boiling point Group 1 increase in reactivity as you go down the group, whereas Group 7 decrease in reactivity</p>	<p>Award up to 2 marks for stating the properties of Group 1 elements</p> <p>Award up to 2 marks for the properties of Group 7 elements</p> <p>Award 1 mark for each correct comparison of Group 1 and Group 7 elements</p>	6
11(a)i	any value between $-109\text{ }^{\circ}\text{C}$ and $-185\text{ }^{\circ}\text{C}$ inclusive		1
(a)ii	gas		1
(a)iii	the boiling point increases as you go down the group		1
(b)	<p>Any four from: argon is a noble gas argon/noble gases are unreactive if argon surrounds the weld site, it will prevent gases in the atmosphere/oxygen from contacting the hot/molten metal this will prevent the gases/oxygen reacting with the hot/molten metal which avoids the production of compounds/metal oxides</p>		4
SPACED LEARNING QUESTIONS			
12(a)	<p>0 to 6 – acid 7 – neutral 8 to 14 – alkali</p>		1 1 1
(b)	green		1

Question	Answers	Extra information	Mark
(c)	litmus / phenolphthalein / methyl orange	Accept other named indicator	1
13(a)	combustion and oxidation are reactions with oxygen combustion is a chemical reaction (of a fuel) with oxygen to transfer energy whereas oxidation is not		1 1
(b)	11.2 g – 10.4 g = 0.8 g		1 1
(c)	iron + oxygen → iron oxide		1
(d)	iron has combined with oxygen from the air to make a solid oxide		1 1
(e)	oxide formed is carbon dioxide, which is a gas that goes into the atmosphere		1 1