

PERIODIC TABLE 2

Mark scheme

Question 1

Question	Answer	Extra information	Marks
(a)	B		1
(b)	e.g. link between Li, Na, K, (Rb, Cs) or Mg, Ca, (Sr, Ba) or F, Cl, Br, I linked appropriate comment about that link e.g. similar physical / chemical properties or similar specific reactions or same number of outer electrons	allow any two elements in the same group (in both Newlandís and the modern periodic table) if no elements identified, allow 1 mark for a general comment about elements in the same column having similar properties every eighth element has similar properties = 1 mark	1 1
(c)	any two from: <ul style="list-style-type: none">no gaps for undiscovered elements or elements still being discoveredsome boxes have 2 elementsmetals and non-metals in same column / mixed up / some elements in the same column had different propertiespattern for first 16 or so elements onlyany sensible suggestion about misplaced elements e.g. copper in group 1 metals		2
(d)	alkanes are not elements or alkanes are compounds	ignore molecule / molecular	1
Total marks			6

Question 2

Questions	Answers	Extra information	Marks
(i)	Mendeleev and Newlands		1
(ii)	atomic weight		1
(iii)	chemical reactions		1
(iv)	electrons		1
Total marks			4

Question 3

Questions	Answers	Extra information	Marks
(a)(i)	undiscovered elements		1
(ii)	they would be in the wrong group / have the wrong / different properties / don't fit the pattern	allow atomic weights may have been wrong	1
(b)(i)	<p>any three from:</p> <ul style="list-style-type: none"> • elements arranged in proton / atomic number order • group: elements in the same group / column have same number of outer electrons • group: number of shells increase down group • period: elements in the same period / row have the same number of shells / energy levels • period: number of protons / electrons increase across period • atomic number: link of atomic number to number of protons • atomic number gives number of electrons 	ignore mass number / atomic weight / neutrons throughout	3
(ii)	<p>it would mean splitting a proton / electron</p> <p>or</p> <p>implication of splitting proton / electron</p>		1

Total marks			6
-------------	--	--	---

Question 4

Questions	Answers	Extra information	Marks
	because the elements are in order of number of electrons or proton number		1
	because the number of energy levels / shells is the number of the period		1
	because the number of electrons in the outer energy level / shell is the number of the group, except in the case of the noble gases		1
Total marks			3

Question 5

Questions	Answers	Extra information	Marks
(a)	similar properties		1
(b)(i)	in order of atomic / proton number	in order of atomic / proton number	1
(ii)	elements in same group have same number (of electrons) in outer shell or highest energy level	allow number (of electrons) increases across a period	1
Total marks			3

Question 6

Questions	Answers	Extra information	Marks
	protons electrons	must be in correct order	1 1
Total marks			2

Question 7

Questions	Answers	Extra information	Marks
(a)	(iron) is a metal	accept transition element allow (iron) had different properties (to oxygen and sulfur) ignore electrons	1

(b)	so that elements with similar properties could be placed together	allow to make the pattern fit ignore undiscovered elements	1
(c)	atomic number(s)	allow proton number(s)	1
(d)	all have one electron in the outer shell (highest energy level) (so they) have similar properties or react in the same way	allow same number of electrons in the outer shell (highest energy level)	1
		allow specific reactions e.g. with water	1
Total marks			5

Q8.

Question	Answer	Marks
A	compounds	4
B	groups	2
C	properties	3
D	symbols	1
Total marks		4

Q9.

Question	Answer	Extra information	Marks
(a)	2		1
(b)	2		1
Total marks			2