

**The modern periodic table**

1. The periodic table on the Data Sheet may help you to answer this question.

- (a) Newlands and Mendeleev both designed periodic tables in which the elements were put in the order of their relative atomic masses.

When the elements are put in this order a few of them are placed incorrectly when compared with a modern periodic table.

- (i) Give **one** example of a pair of elements that would be placed incorrectly if they were in the order of their relative atomic masses.

..... and .....

(1)

- (ii) Explain why placing these two elements in the order of their relative atomic masses would **not** be correct.

.....  
 .....

(1)

- (b) In the modern periodic table the elements are put in order of their atomic (proton) numbers. Explain how the positions of the elements in the periodic table are linked to the electronic structure of their atoms.

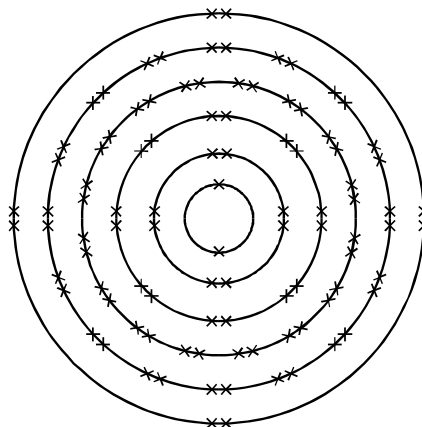
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(2)

(Total 4 marks)

2. In 1999 scientists at the University of Berkeley claimed to have discovered the element Ununhexium.

The electron arrangement of this element is thought to be as shown in the diagram below.



Unit C3, C3.1.2

(a) Which group of the periodic table should this element be placed in?

Group .....

(1)

(b) Give a reason for your answer.

.....  
 .....

(1)

(Total 2 marks)

3. Use the periodic table on the Data Sheet to help you to answer these questions.

(a) Write the symbol for helium.

.....

(1)

(b) Write the name of an element in Group 4.

.....

(1)

(c) Write the name of the element which has a relative atomic mass of 64.

.....

(1)

(d) Write the name of the element with the next highest atomic number after Te (tellurium) in the periodic table.

.....

(1)

(Total 4 marks)

4. John Newland produced a periodic table in 1866. The first 21 elements in his table are shown in the diagram.

Column						
1	2	3	4	5	6	7
H	Li	Be	B	C	N	O
F	Na	Mg	Al	Si	P	S
Cl	K	Ca	Cr	Ti	Mn	Fe

Use the periodic table on the Data Sheet to help you to answer these questions.

(a) In which **two** columns of Newland's periodic table do all the elements have similar properties?

.....

(1)

(b) The modern periodic table is arranged in a different order to Newland's table.

(i) What order is used in the modern periodic table?

.....

(1)

(ii) Argon has a higher relative atomic mass than potassium. Explain why.

.....

.....

(1)

(iii) Describe the changes in the number of electrons in the atoms of elements in the period which begins with potassium and ends with krypton.

.....

.....

.....

(2)

(Total 5 marks)