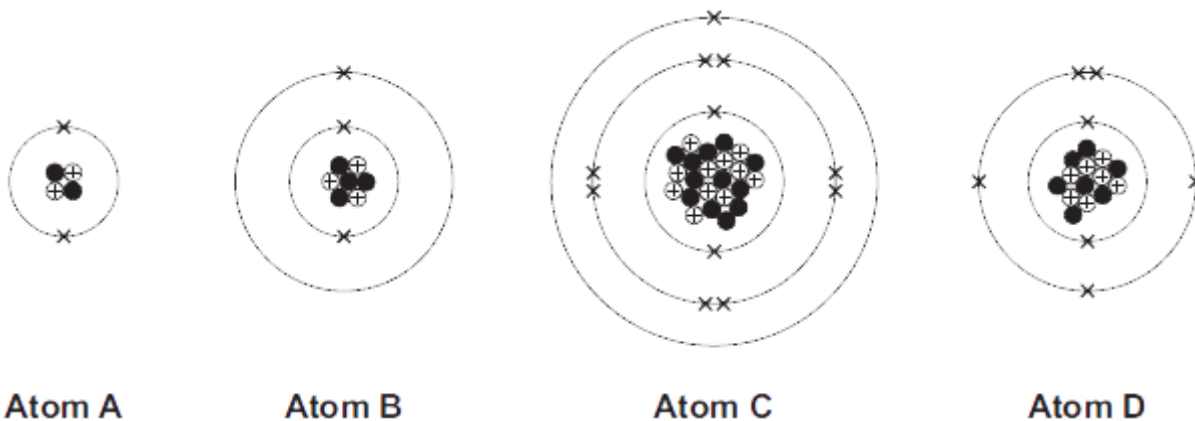


The diagrams show the sub-atomic particles in four different atoms.



Use the Chemistry Data Sheet to help you to answer these questions.

(a) Draw a ring around the correct answer to complete each sentence.

(i) The centre of each atom is called the

energy level.  
molecule.  
nucleus.

(1)

(ii) The centre of each atom contains neutrons and

bonds.  
electrons.  
protons.

(1)

(b) Complete the sentence.

There is no overall electrical charge on each atom because the  
number of \_\_\_\_\_ is equal to the number of \_\_\_\_\_

(1)

(c) What is the name of the element represented by atom **D**? \_\_\_\_\_

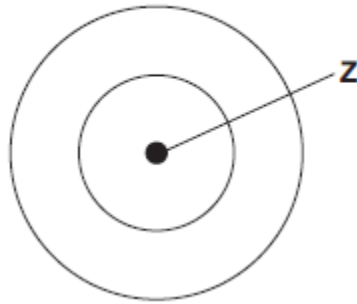
(1)

**(Total 4 marks)**

There are eight elements in the second row (lithium to neon) of the periodic table.

(a) **Figure 1** shows an atom with two energy levels (shells).

**Figure 1**



(i) Complete **Figure 1** to show the electronic structure of a boron atom.

(1)

(ii) What does the central part labelled **Z** represent in **Figure 1**?

\_\_\_\_\_

(1)

(iii) Name the sub-atomic particles in part **Z** of a boron atom.

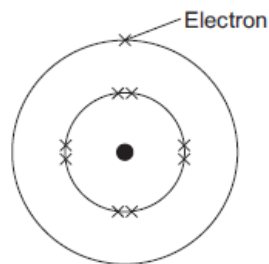
Give the relative charges of these sub-atomic particles.

\_\_\_\_\_  
\_\_\_\_\_

(3)

(b) The electronic structure of a neon atom shown in **Figure 2** is **not** correct.

**Figure 2**



Explain what is wrong with the electronic structure shown in **Figure 2**.

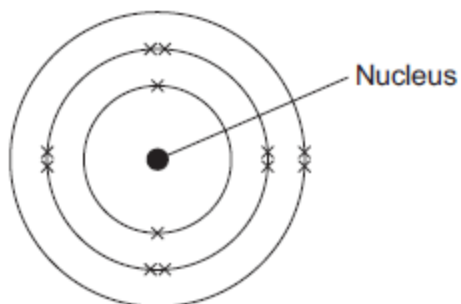
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(3)

(Total 8 marks)

This question is about magnesium.

- (a) (i) The electronic structure of a magnesium atom is shown below.



Use the correct answer from the box to complete each sentence.

<b>electrons</b>	<b>neutrons</b>	<b>protons</b>	<b>shells</b>
------------------	-----------------	----------------	---------------

The nucleus contains protons and \_\_\_\_\_ .

The particles with the smallest relative mass that move around the nucleus are called \_\_\_\_\_ .

Atoms of magnesium are neutral because they contain the same number of electrons and \_\_\_\_\_ .

(3)