9 SCIENCE 2014

CHEMISTRY TEST ONE: THE ATOM

ANSWER KEY

Name: _____ **Teacher:** _____ **Mark:** /50

Percentage: %

SECTION A: **MULTIPLE CHOICE** **(5 marks)**

Select the most correct answer for each question below.

1. The third electron shell of an atom can only hold:

(a) 18 electrons.
(b) 2 electrons.
(c) 8 electrons.
(d) 4 electrons.

2. To work out the number of neutrons in an atom:

(a) Take the atomic number from the mass number.
(b) Take the mass number from the atomic number.
(c) Add the mass number to the atomic number.
(d) Add the number of electrons to the number of protons.

3. How many of the known elements are found naturally on Earth?

(a) 87
(b) 94
(c) 79
(d) 91

4. The definition that best describes the word 'element' is:

(a) The fundamental building block of all materials.
(b) A substance made up of only one type of atom.
(c) A substance made up of two or more types of atoms.
(d) A metal that has many atoms.

5. H2O (water) is an example of a/an:

(a) Element.
(b) Crystal lattice.
(c) Compound.
(d) Mixture.

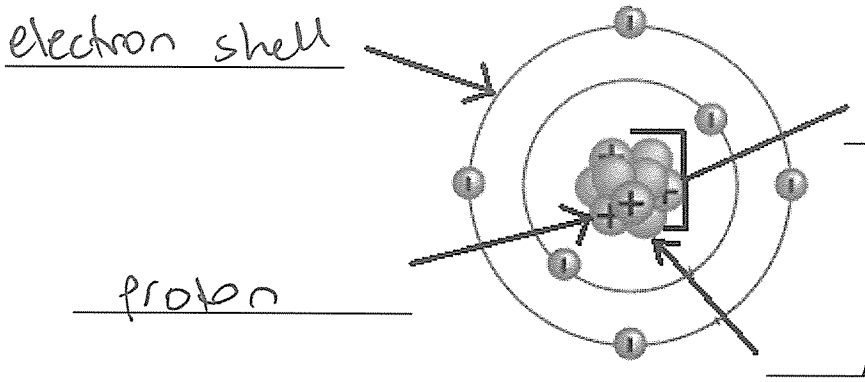
ANSWER KEY

SECTION B: **SHORT ANSWER** **(45 marks)**

1. State the difference between an element and a compound. (2 marks)

Element made up of only one type of atom. (1)
Compound made up of two or more types of atom. (1)

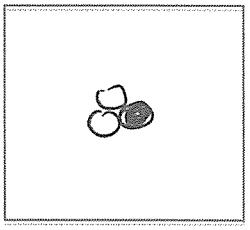
2. Label the diagram of the atom below. (2 marks)



0.5 mark each

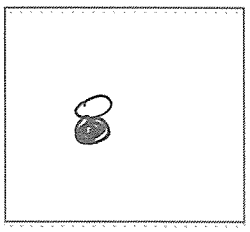
3. Follow the instructions below (draw neatly and in pencil). (4 marks)

a. In the box to the right draw a compound with three atoms.



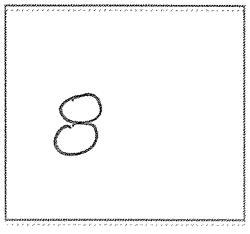
(1)

b. In the box to the right draw a compound with two atoms.



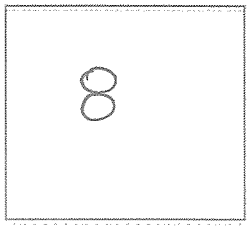
(1)

c. In the box to the right draw an element with two atoms.



(1)

d. In the box to the right draw an example of a molecule.



(1)

4. Fill in the missing element names and symbols below. (10 marks)

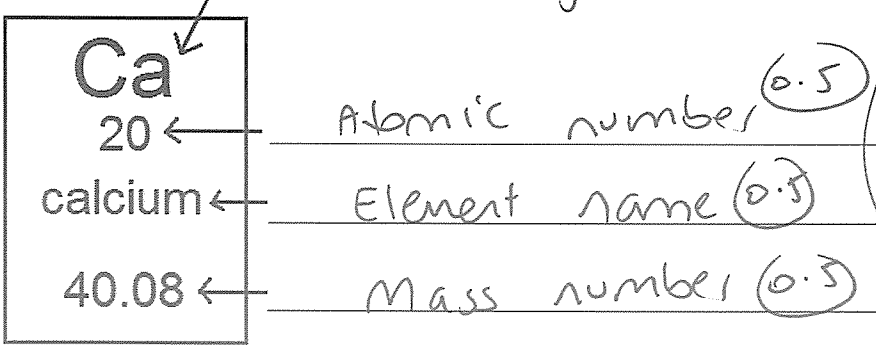
ELEMENT	SYMBOL
Hydrogen	H
Helium	He
Lithium	Li
Beryllium	Be
Boron	B
Carbon	C
Nitrogen	N
Oxygen	O
Fluorine	F
Neon	Ne
Sodium	Na
Magnesium	Mg
Aluminium	Al
Silicon	Si
Phosphorus	P
Sulfur (sulphur)	S
Chlorine	Cl
Argon	Ar
Potassium	K
Calcium	Ca

1 mark each

No mark for incorrect spelling

5. Label the diagram below using the words given. (2 marks)

Atomic number, element name, element symbol, mass number



must have perfect spelling or no mark

6. Write definitions for the terms below. (4 marks)

Periodic table: A ~~table~~ that shows all the known elements. (1)

Atom: The building block (1) of all materials (1) (basic unit of matter)

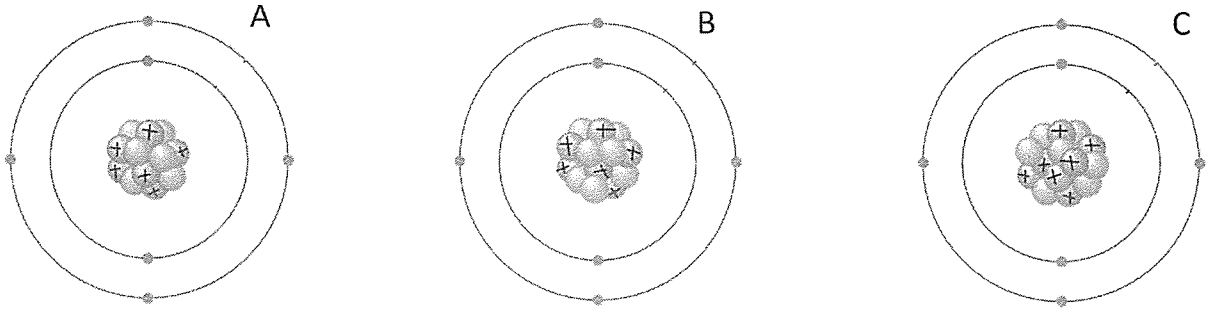
7. Fill in the missing words. (2 marks)

The nucleus is made up of neutrons (0.5) and protons (0.5).

protons (0.5) have a positive charge while neutrons (0.5) have a negative charge.

8. Identify which atoms are isotopes of the same element. (1 mark)

A B must have both or no mark.



9. Write the term next to its matching definition below. (5 marks)

Electron configuration, electron shell, atomic number, mass number, isotope

a) The number of protons and neutrons in the nucleus of an atom.

Mass number (1)

b) Atoms that have the same number of protons but a different number of neutrons in their nucleus.

Isotope (1)

must have perfect spelling or no mark

c) The number of protons in the nucleus of an atom.

Atomic number (1)

d) The number of electrons in each electron shell of an atom.

Electron configuration (1)

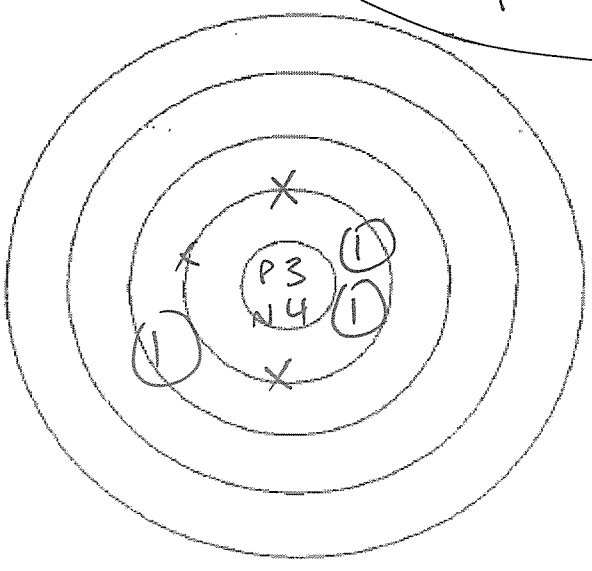
e) The layer that surrounds the nucleus and holds electrons.

Electron shell (1)

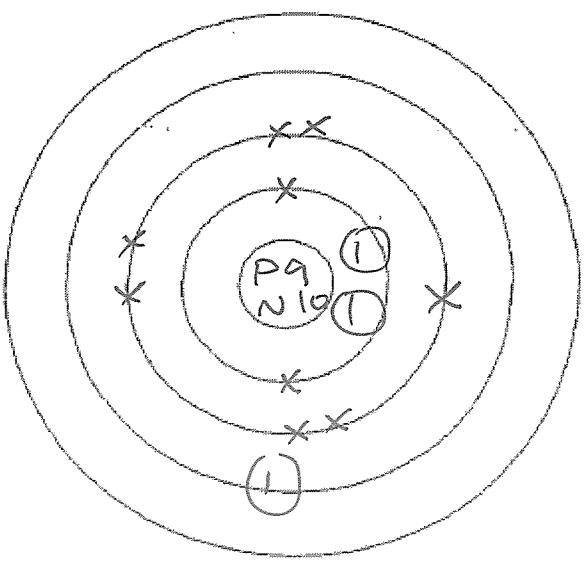
10. Complete the electron configurations below (neatly in pencil). (6 marks)

(1) number of protons
(1) number of neutrons
(1) correct electron positions in shells.

Li
3
Lithium
7



F
9
Fluorine
19



11. State the difference between a mixture and a compound. (2 marks)

The atoms in a mixture are not chemically combined and the atoms in a compound are chemically combined. (1) (1)

12. Determine the following for the element potassium. (3 marks)

Number of protons: 19 (0.5)

Number of electrons: 19 (0.5)

Number of neutrons: 20 (0.5)

Atomic number: 19 (0.5)

Mass number: 39 (0.5)

Element symbol: K (0.5)

K
19
Potassium
39

13. Propose why atomic symbols are the same all over the world. (2 marks)

Elements are written (1) in different languages around the world, the symbols are the same internationally so they can be recognised. (1)