

MINGA DAY SECONDARY SCHOOL

GRADE 11 CHEMISTRY TEST 1 – TERM 1 – 2023

DURATION: 1 HOUR 30 MINUTES

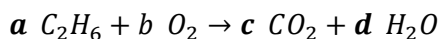
MARKS: 50

NAME: **CLASS:**

SECTION A [10 MARKS]

Answer all the questions by crossing out the best answer **A, B, C** or **D** with an **X**

1. Below is a chemical equation.



What are the correct values of **a, b, c** and **d**?

a	b	c	d
A. 2	7	4	6
B. 1	7	2	3
C. 1	5	4	6
D. 2	5	4	6

2. Consider the following chemical reaction.



The letters **X, Y** and **Z** represent...

X	Y	Z
A. 2	2	2
B. 1	1	2
C. 3	3	2
D. 3	3	5

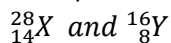
3. Element **X** has an electronic configuration 2, 8, 8, 1 while that for element **Y** is 2, 8, 6.

Which one of the following is true about the compound formed between **X** and **Y**?

- | | |
|--|--|
| A. Covalent compound of formula X_2Y | C. Covalent compound of formula XY_2 |
| B. Ionic compound of formula XY_2 | D. Ionic compound of formula X_2Y |

4. The elements **X** and **Y** have the following nuclides:

Which one of the following is true about the compound formed between **X** and **Y**?



- | | |
|--|--|
| A. Covalent compound of formula X_2Y | C. Covalent compound of formula XY_2 |
| B. Ionic compound of formula XY_2 | D. Ionic compound of formula X_2Y |

5. A nuclide for phosphorus is represented as ${}^{31}_{15}\text{P}$.

A phosphorus ion contains...

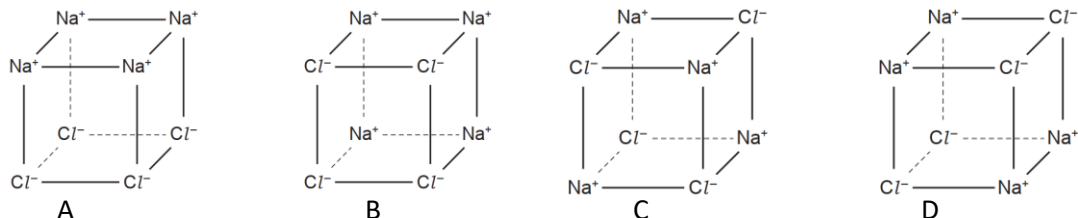
	Protons	Neutrons	Electrons
A.	15	15	13
B.	15	16	18
C.	16	15	16
D.	16	16	18

6. The nuclide of aluminium ion is written as ${}^{27}_{13}\text{Al}^{3+}$.

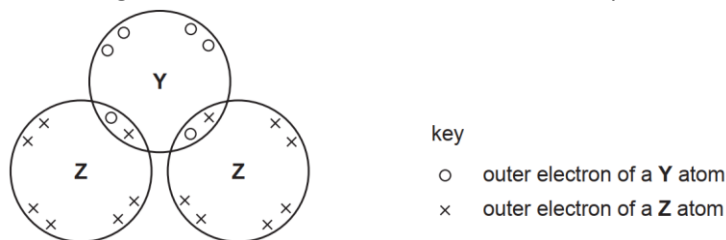
State the number of neutrons, protons and electrons in the nuclide of the ion.

A.	27	10	13
B.	14	13	13
C.	14	13	10
D.	27	10	10

7. Which pair of elements, when combined together, do **not** form a covalent compound?
- A. Lithium and fluorine
B. Phosphorus and fluorine
C. Nitrogen and chlorine
D. Sulphur and chlorine
8. Which diagram correctly shows the arrangement of the ions in solid sodium chloride?



9. How does a magnesium atom form a bond with an oxygen atom?
- A. By giving one pair of electrons to the oxygen atom
B. By sharing one pair of electrons, both electrons provided by the magnesium atom
C. By sharing two pairs of electrons, both pairs provided by the oxygen atom
D. By sharing two pairs of electrons, each atom donating one pair of electrons
10. The diagram shows the arrangement of electrons in a molecule of compound YZ_2 .



What are elements Y and Z?

- A. Oxygen
B. Calcium
C. Carbon
D. Sulphur
- Hydrogen
Chlorine
Oxygen
Chlorine

SECTION B [40 MARKS]

Answer all questions in this section in the spaces provided

11. (a) What is meant by the following terms;

i. mass number [1]

ii. relative atomic mass [1]

iii. isotopes? [1]

(b) An element X consists of 60.10% of atoms with a mass of 68.93 and 39.90% of atoms with a mass of 70.92.

Calculate the relative atomic mass of the element. [2]

(c) Another element **Y** consists of 90.51% of atoms of mass 19.99, 0.27% of atoms of mass 20.99 and 9.27% atoms of mass 21.99.

What is the relative atomic mass of element **Y**? [2]

(d) Some isotopes are said to be radioisotopes.

i. What are radioisotopes? [1]

ii. State any **two** uses of radioisotopes. [2]

✓

✓

TOTAL [10]

12. Write the formulae for the following compounds;

i. calcium chloride [1]

ii. ammonium sulphate [1]

iii. iron (III) oxide [1]

iv. copper (II) oxide [1]

TOTAL [4]

13. Write down balanced chemical equations, including state symbols for each of the following reactions;

i. Mercury oxide decomposes into mercury and oxygen [2]

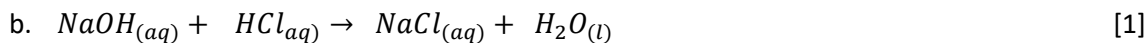
ii. Hydrogen gas reacts with oxygen gas to form water [2]

iii. Potassium metal reacts with water to produce a solution of potassium hydroxide and hydrogen gas. [2]

iv. Calcium dioxide dissolves in water to produce calcium hydroxide solution [2]

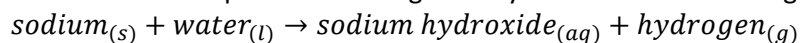
TOTAL [8]

14. Balance the following equations;



TOTAL [4]

15. Write down a balanced chemical equation including state symbols for the following reaction;

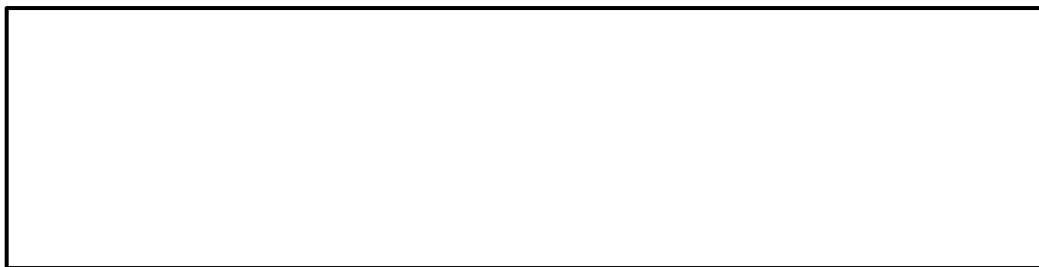


TOTAL [2]

16. Sodium reacts with oxygen to form a compound.

a. What type of bonds are present in the compound formed? [1]

b. Draw a "dot" and 'cross' diagram, **showing all the shells**, to show the compound formed.[3]



c. State any three properties of the compound formed between sodium and oxygen. [3]

- i. _____
ii. _____
iii. _____
iv. _____

TOTAL [8]

17. With the aid of "cross" and 'dot' diagrams, showing only the outermost shells, show the bonds formed in the following compounds;

a. Oxygen, O_2 [2]



b. Methane, CH_4 [2]



TOTAL [4]