

**YEAR: 10**

**SUBJECT: Science**

**Chemistry Term 1**

**Please do not mark this paper.**

**Year 10 Chemistry Test**

**Part A: Multiple Choice 15 marks**

**Record answers in the answer booklet provided.**

1. Which of the following best describes the smallest sub-atomic particle with a negative charge?

(a) A neutron.

(b) A molecule.

(c) An electron.

(d) A proton.

2. The periodic table:

(a) is a systematic chart listing all known elements

(b) arranges elements from lowest to highest atomic number

(c) separates the metals and non-metals

(d) all of the above

3. A vertical column of elements on the periodic table is called a

(a) series

(b) period

(c) list

(d) group

5. A horizontal row of elements on the periodic table is called a

(a) group

(b) period

(c) family

(d) list

6. Haematite, Fe2O3, is not found in the periodic table because

(a) it has properties different from the metals in any other group

(b) it is not an element

(c) it is only a recent discovery

(d) its relative atomic mass is too great

7. Which of the following has an atomic number of 12 and has 2 electrons in its valence shell?

(a) Be

(b) C

(c) Na

(d) Mg

8. Nitrogen N is in period 2, group 15. Which of the following elements would have properties most similar to nitrogen?

(a) phosphorus P (period 3, group 15)

(b) oxygen O (period 2, group 16)

(c) neon Ne (period 2, group 18)

(d) sodium Na, because its symbol also starts with N

9. The figure below shows the atomic symbol of element X:

15

X

7

Which of the following is the correct electron configuration for element X?

(a) 2 , 5

(b) 2 , 6

(c) 2 , 7

(d) 2 ,8, 5

10. The table below shows information about particles A and B

|  |  |  |
| --- | --- | --- |
| Particle | Proton number | Electron arrangement |
| A | 11 | 2 , 8 |
| B | 19 | 2 , 8 , 8 |

Based on the information provided, A and B are:

(a) positive ions

(b) negative ions

(c) noble gases

(d) isotopes of the same element

11. Which is the most reactive non-metal element?

(a) Sodium.

(b) Potassium.

(c) Chlorine.

(d) Fluorine.

12. When atoms lose electrons, they form:

(a) negative ions

(b) positive ions

(c) neutral ions

(d) Positive and negative ions, depending on their position in the Periodic Table

13. In which group of the periodic table are the halogens found? Group

(a) 1

(b) 2

(c) 17

(d) 18.

14. Which of these are ALL non-metals?

1. Zinc, carbon, phosphorous
2. Iron, nickel, aluminium
3. Sulfur, iodine, argon
4. Tin, gold, mercury

15. Elements in the same group have similar\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ properties.

1. Chemical
2. Atomic
3. Chemical and atomic
4. None of the above

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**Term One 2018 Chemistry Test ANSWER BOOKLET**

**NAME:**

**FORM: DATE:**

**Multiple Choice Short Answer Extended Answer Total**

**/64**

**/10**

**/39**

**/15**

**SECTION ONE: Multiple choice answers**

**Cross (X) through the correct answer.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1** | **a** | **b** | **c** | **d** |
| **2** | **a** | **b** | **c** | **d** |
| **3** | **a** | **b** | **c** | **d** |
| **4** | **a** | **b** | **c** | **d** |
| **5** | **a** | **b** | **c** | **d** |
| **6** | **a** | **b** | **c** | **d** |
| **7** | **a** | **b** | **c** | **d** |
| **8** | **a** | **b** | **c** | **d** |
| **9** | **a** | **b** | **c** | **d** |
| **10** | **a** | **b** | **c** | **d** |
| **11** | **a** | **b** | **c** | **d** |
| **12** | **a** | **b** | **c** | **d** |
| **13** | **a** | **b** | **c** | **d** |
| **14** | **a** | **b** | **c** | **d** |
| **15** | **a** | **b** | **c** | **d** |

**Part B: Short Answer 39 marks**

1. Chlorine is represented as 35 Cl17 (2 marks)

Answer the following questions in relation to this isotope:

(a) The mass number is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(b) The atomic number is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(c) The number of neutrons in the nucleus is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(d) The number of electrons in a neutral atom is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Complete the following table: (8 marks)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Element** | **Symbol** | **Atomic number** | **Number of electrons** | **Electron shell diagram** | **Electron configuration** |
| Sodium |  |  |  |  |  |
| Chlorine |  |  |  |  |  |

3. Complete the following table: (8 marks)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Element** | **Symbol** | **Atomic number** | **Number of electrons** | **Electron shell diagram** | **Electron configuration** |
| Sodium ion |  |  |  |  |  |
| Chlorine  ion |  |  |  |  |  |

4. State the period and group of the Periodic Table of the elements with the following

electron arrangements: (3 marks)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Electron arrangement | Element symbol | Period | Group | Valence electron |
| 2,8 |  |  |  |  |
| 2,8,5 |  |  |  |  |
| 2,8,8,1 |  |  |  |  |

5. Explain, in terms of atomic structure, why helium is used in balloons instead of hydrogen.

(4 marks)

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

6. Given the substances below, predict the type of bonding that would exist between the molecules:

(3 marks)

Sugar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Salt \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Solder \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. Complete the following word equation. (1 mark)

Sodium + water 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. Identify the following elements: (4 marks)

1. I am the first non-metal in Period 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. I have ten more protons than sulphur. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. I am in group 7. The name of my family is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) I am a metal but I am the only liquid element. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e) I am a shiny, yellow, solid metal and am very expensive. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

f) I am the lightest element known. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

g) I am an inert gas with the lowest atomic number. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

h) I am the first metal in Period 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. There are groups on the periodic table with special characteristics. These are groups

1, 17, 18 on the periodic table. Complete the table below. (6 marks)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Group** | **Special name** | **Examples** | **Properties** | **Bonding** | **Reactivity trends** |
| 1 |  |  |  |  |  |
| 17 |  |  |  |  |  |
| 18 |  |  |  |  |  |

**Part C: Extended answer** **(10 marks)**

1. Consider the following data:

**Element Number of Electrons Boiling Point (K)**

Helium 2 4

Neon 10 27

Argon 18 87

Krypton 36 121

Xenon 54 166

Radon 86 211

a) Plot a graph of number of electrons (x-axis) vs boiling point (y-axis). (5 marks)

\*USE THE GRAPH PAPER PROVIDED\*

b) Explain the trend in the data (2 marks)

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

c) Explain why the above elements do not react with any other element. Use a diagram in your answer.

(3 marks)

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