SAFETY BAY
SENIOR HIGH SCHOOL

imagine believe achieve

2019 ANSWERS

YEAR: 10

SUBJECT: Science

Chemistry

ATAR Pathway

Please do not mark this paper.

Year 10 Chemistry Test

Part A: Multiple Choice — 10 marks

Record answers in the answer booklet provided.

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

a) Sodium.
b) Potassium.
c) Chlorine.
d) Fluorine.

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 horizontal row of elements on the periodic table is called a

a) group.
b) period.
c) family.
d) list.

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

$$^{15}_{7}X$$

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

5. Haematite, Fe_2O_3, 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.

6. 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.

7. 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.

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

a) 1
b) 2
c) 17
d) 18

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

a) group.
b) period.
c) family.
d) list.

b

10. **Which of the following is not a property of metals?**

a) Good conductors of electricity.
b) Good conductors of heat.
c) Low melting and boiling points.
d) High melting and boiling points.

SAFETY BAY
SENIOR HIGH SCHOOL
imagine believe achieve

Chemistry Test ATAR Pathway

ANSWER BOOKLET

NAME: _____

CLASS: _____ **DATE:** _____

ASSESSMENT KEY

I CAN STATEMENTS	QUESTIONS
MUST Uses the position of elements in the periodic table to make some correct predictions about their observable properties.	1, 2, 3, 5, 7, 8,9, 10, 11, 12, 13, 14, 15,16, 17,18, 19, 20
SHOULD Uses the position of elements in the periodic table to determine their atomic structure and electron configuration, and makes predictions about chemical properties and reactivity.	4, 6, 12, 16, 17, 18, 21
COULD Uses the position of elements in the periodic table to determine their atomic structure and electron configuration, and makes predictions about bonding types and reactivity of elements.	15, 16, 17,18

Multiple Choice	Short Answer	Extended Answer	Total
/10	/37.5	/5	/52.5

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

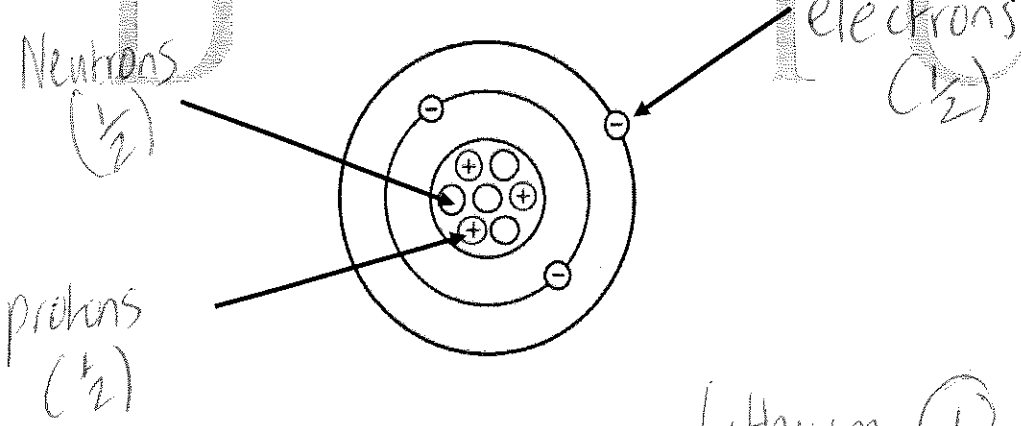
Part B: Short Answer — 43 marks

11. Match the words below to their descriptions in the table: (3 marks)

Atom	Electron	Proton
Nucleus	Neutron	Ion

Word	Description
Electron	Negatively charged particles that orbits around the nucleus of an atom
Nucleus	Central part of an atom containing protons and neutrons
Atom	Smallest piece of ordinary matter
Proton	Positively charged sub-atomic particle
Ion	Charged atom
Neutron	Sub-atomic particle that has no charge

12. Label the model of the atom below: (2.5 marks)



This is an atom is of the element: Lithium (1)

13. An atom of iodine is shown on the right (3 marks)

a) How many protons are in this atom? 53

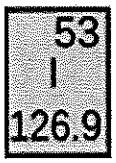
b) How many neutrons are in this atom? 74

c) How many electrons are in this atom? 53

d) What is the mass number of this atom? 126.9 // 127

e) What is the atomic number of this atom? 53

f) What is the ionic formula of iodine? I^{-1}



14. In the Periodic Table where do we find the following: (use directions rows, columns, middle, left/right or top/bottom) → You can only use each word once (3.5 marks)

a) Periods rows

b) Groups columns

c) Metals Left

d) Non-metals Right

e) Reactive metals ~~Left~~ , ~~Left~~ Top

f) Reactive non-metals ~~Right~~ Top

g) Transitional Metals Middle

½ mark each

15. Match the group number to its name. (2.5 marks)

Group I	Alkali Metals
Group 2	Alkaline Earth Metals
Group 4	Carbon Group
Group 7/17	Halogens
Group 8/18	Noble Gases

½ mark each

16. Complete the following table (4 marks)

Element	Symbol	Atomic number	Number of electrons	Electron shell diagram	Electron configuration
Sodium	Na	11 (½)	11 (½)	Na 2 8 1 (½ ½ ½ ½)	2,8,1 (1)

17. Complete the following table: (5 marks)

Element	Symbol	Atomic number	Number of electrons	Electron shell diagram	Electron configuration	Type(s) of bonding
Chlorine ion	Cl^-	17 (½)	18 (½)	[(17) 2 8 8]⁻ (½ for the charge, ½ for the brackets)	2,8,8 (1)	Ionic (1) eg NaCl / Covalent (1) eg Cl_2

18. There are groups on the periodic table with special characteristics. These are groups 1, 17, 18 on the periodic table. Complete the table below. (9 marks)

Group	Special name	Properties	Reactivity trends
1	Alkali Metal (½)	Any 2 (½): • Shiny Soft Silvery white • high melting points • none occur free in nature • react with H_2O to form metal OH • react with O_2 to form metal oxides • react with halogens to form ionic salts • all have 1 valence electron	Very reactive reactivity increases as you go down the group (1)
17	Halogens (½)	• Can occur in all 3 states of matter • most form diatomic molecules • all have 7 valence electrons • react with O_2 to form halogen oxides • react with metals to form metal halides (½ each)	Very reactive reactive decreases as you go down the group (1)

18	Noble Gases (½)	(½)	• Unreactive • Very low melt/boiling points So therefore gases • monatomic gases • produce colours in "Neon Signs" (½)	Unreactive Valence electron shells are full (1)

19. Give a use of the following metals and describe their property that makes it possible. (3 marks)

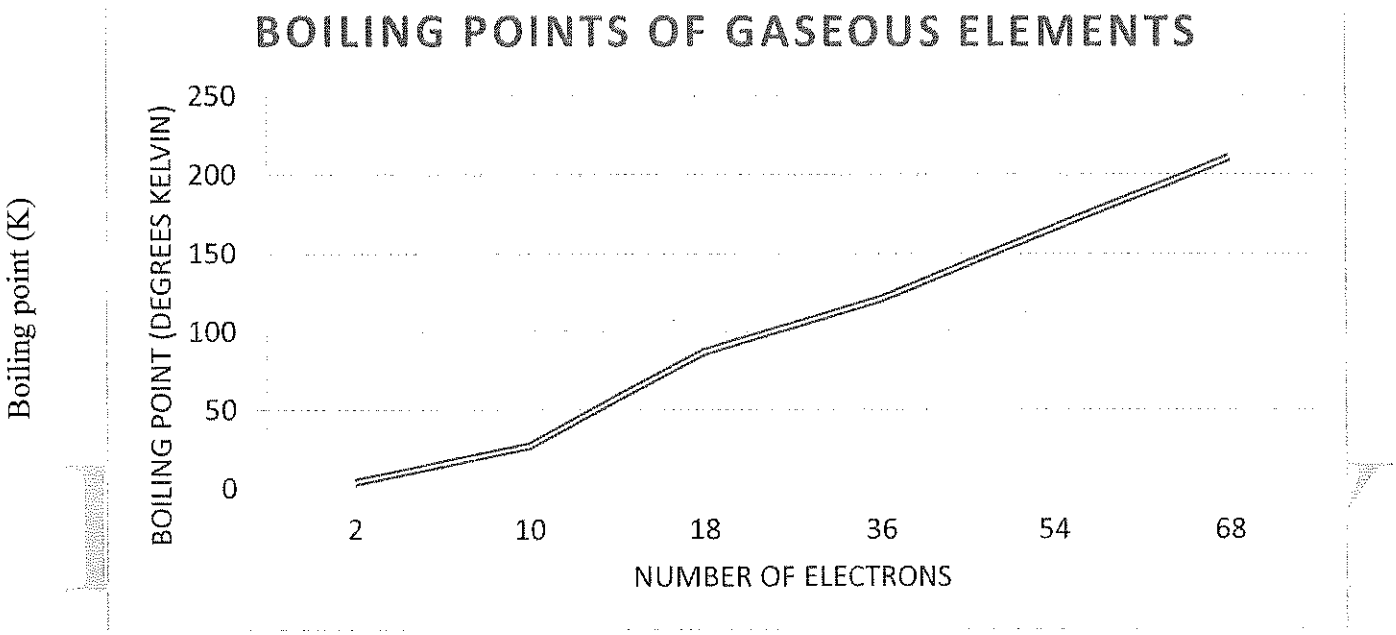
EXAMPLE
Aluminium
Use: Used in boats
Property: forms protective layer that doesn't corrode.

a) Copper
Use: wire (½)
Property: ductile (½) can be drawn into wire (½)
conductive - can conduct heat + electricity

b) Gold
Use: jewellery (½)
Property: lustre - attractive colour (½)
malleable - beaten + shaped
reactivity - ~~reacts~~ slow to tarnish (½)

Part C: Extended answer (5 marks)

Use the graph below the answer the following questions.



20. Explain the trend in the data. (2 marks)

As the ~~boiling~~ number of electrons increases
So to does the boiling point (1)
directly proportional (1)
Van der Waals forces

21. Explain why the above elements do not react with any other element. Use a diagram in your answer. (3 marks)

They are all noble gases (½) which are unreactive because their valence shell is full (½) meaning that they do not need to lose/gain any electrons (½) eg

(1) correct drawing

full outer shell
↓
max number of electrons in shell (2) 2 valence el