

Name: ANSWER KEY

Teacher: _____

Mark: _____ /44

Percentage: _____ %

SECTION A: MULTIPLE CHOICE

(5 marks)

Select the most correct answer for each question below.

1. The only three metals that float on water are:

- ☒ (a) Sodium, lithium and potassium.
- (b) Potassium, nickel and tin.
- (c) Nickel, aluminium and sodium.
- (d) Aluminium, potassium and copper.

2. Water has a pH of:

- (a) 9.
- (b) 8.
- (c) 6.
- ☒ (d) 7.

3. Metalloids are sometimes called:

- ☒ (a) Semi-metals.
- (b) Part-elements.
- (c) Semi-elements.
- (d) Part-metals.

4. A correct definition for the term pH would be:

- (a) A scale used to measure the number of hydrogen ions in a solution.
- ☒ (b) A scale used to measure the concentration of hydrogen ions in a solution.
- (c) A scale used to measure the concentration of hydroxide ions in a solution.
- (d) A scale used to measure the number of hydroxide ions in a solution.

5. The photo on the right shows objects that are made up of a/an:

- (a) Pure metal.
- (b) Non-metal.
- (c) Allotrope.
- ☒ (d) Alloy.

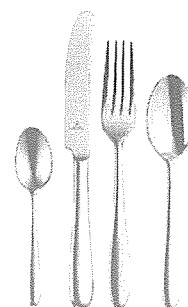


Table of common ions

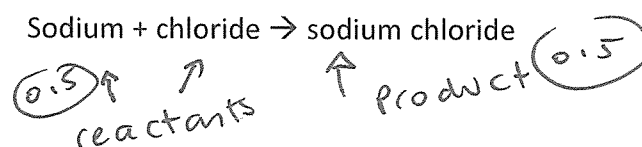
Cations		Anions	
+1 charge		- 1 charge	
Hydrogen	H ⁺	Fluoride	F ⁻
Lithium	Li ⁺	Chloride	Cl ⁻
Sodium	Na ⁺	Bromide	Br ⁻
Potassium	K ⁺	Iodide	I ⁻
Copper (I)	Cu ⁺	Hydride	H ⁻
Silver	Ag ⁺	Hydroxide	OH ⁻
Ammonium	NH ₄ ⁺	Nitrite	NO ₂ ⁻
		Nitrate	NO ₃ ⁻
+2 charge		- 2 charge	
Manganese	Mn ²⁺	Oxide	O ²⁻
Magnesium	Mg ²⁺	Sulfide	S ²⁻
Calcium	Ca ²⁺	Carbonate	CO ₃ ²⁻
Barium	Ba ²⁺	Sulfate	SO ₄ ²⁻
Zinc	Zn ²⁺	Sulfite	SO ₃ ²⁻
Copper (II)	Cu ²⁺		
Mercury (II)	Hg ²⁺		
Iron (II)	Fe ²⁺		
Tin (II)	Fe ²⁺		
Lead (II)	Pb ²⁺		
Nickel (II)	Ni ²⁺		
Beryllium	Be ²⁺		
+3 charge		- 3 charge	
Aluminium	Al ³⁺	Nitride	N ³⁻
Iron (III)	Fe ³⁺	Phosphate	PO ₄ ³⁻
Boron	B ³⁺	Phosphide	P ³⁻
Chromium	Cr ³⁺		

SECTION B:

SHORT ANSWER

(39 marks)

1. Label the reactants and the products in the equation below. (1 mark)



2. Write a definition for the term 'ion'. (2 marks)

An atom ⁽¹⁾ that has an
 electric charge
 (0.5) (0.5)

3. Name the following ions. (1 mark)

a) K^+ Potassium (0.5)

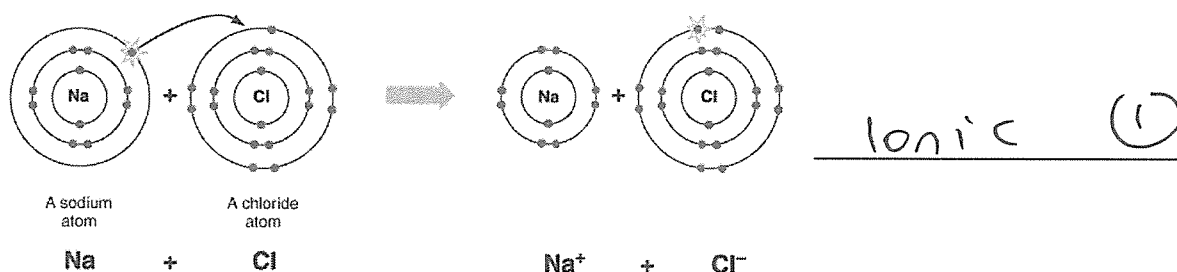
b) S^{2-} sulfide (0.5)

4. State what must happen to an atom to make it: (2 marks)

a) A cation: (0.5) it loses (0.5) electrons

b) An anion: (0.5) it gains (0.5) electrons

5. State the type of bonding that is shown in the diagram below. (1 mark)



6. Fill in the table below (use the table of common ions to help you). (4 marks)

Ionic formulae	Name of metal (cation)	Name of non-metal (anion)	Name of compound
MgCO ₃	Magnesium (0.5)	Carbonate (0.5)	Magnesium Carbonate (0.5)
NaI	Sodium (0.5)	Iodide (0.5)	Sodium Iodide (0.5)

7. Work out the ionic formulas in the table below (use the table of common ions to help you). (4 marks)

Compound	Working out	Ionic formula
Boron oxide	B^{3+} O^{2-} $B_2 \times O_3$ (1)	B_2O_3 (1)
Iron (III) oxide	Fe^{3+} O^{2-} $Fe_2 \times O_3$ (1)	Fe_2O_3 (1)

8. List three physical properties of metals. (1.5 marks)

- Lustrous Thermal conductor
 - Malleable Electrical conductor
 - Ductile Dense
- Solid at room temp (except mercury)
- 0.5 for each

9. List three physical properties of non-metals. (1.5 marks)

- Dull Poor electrical conductor
 - Brittle Solid, liquid or gas at room temp
 - Poor thermal conductor (except Bromide)
- 0.5 for each

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

Most metals around you are not pure elements but are alloys. (0.5)

An alloy is made up of a base metal and a small amount of another element. (0.5)

Steel can have chromium and nickel added to it to create stainless steel. (0.5) (0.5)

11. State the **name** and **symbol** of the only metal that is liquid in room temperature. (1 mark)

Mercury Hg
(0.5) (0.5)

12. State the **name** and **symbol** of the only non-metal that is liquid in room temperature. (1 mark)

Bromide Br
(0.5) (0.5)

13. Explain why pure metals usually cannot be used in their pure form. (1 mark)

Most pure metals are too soft.

14. List the three common allotropes (forms) that carbon comes in. (1.5 marks)

Amorphous carbon (0.5)

Diamond (0.5)

Graphite (0.5)

15. Fill in the missing words. (1 mark)

Acids turn blue litmus paper a red colour. (0.5)

Bases turn red litmus paper a blue colour. (0.5)

16. Of the two main types of indicator that you used in class, which one would present a more accurate result and explain the reason why. (2 marks)

Universal indicator would present a more accurate result as it gives a specific

pH whereas litmus paper only states whether the substance is acidic or basic.

17. Write the general equation for the reaction between an acid and a metal. (2 marks)

Acid + metal \rightarrow salt + hydrogen gas

18. Write the general equation for the reaction between an acid and a base (neutralisation reaction). (2 marks)

acid + base \rightarrow salt + water

19. Write the general equation for the reaction between an acid and a carbonate. (2 marks)

Acid + carbonate \rightarrow calcium carbonate + water + carbon dioxide

20. Write the term next to its matching definition below (must be spelt correctly!) (5.5 marks)

~~Cation, base, recrystallisation, soluble, salt, anion, acid, alkali, solubility, solution, neutralisation.~~

a) Any compound formed by a metal taking place of the hydrogen atom in an acid.

Salt

(0.5)

b) A positively charged ion.

Cation

(0.5)

c) A reaction of an acid with a base, forming a salt and water.

Neutralisation

(0.5)

d) A negatively charged ion.

Anion

(0.5)

e) A base that can be dissolved in water.

Alkali

(0.5)

f) A substance that releases hydroxide ions.

Base

(0.5)

g) A substance that releases hydrogen ions into an aqueous solution.

Acid

(0.5)

h) Substance able to be dissolved.

soluble

(0.5)

i) When water is removed and ions can stick together again.

Recrystallisation

(0.5)

j) How easily an ionic compound dissolves.

Solubility

(0.5)

k) Ions spread evenly throughout the solvent.

Solution

(0.5)

No
mark
if spelling
is
wrong