


1. Indicate if each statement is true or false. (10 marks)

T for True or F for False	Statement
<u>T</u>	Each element in a group on the periodic table has the same number of electrons in its outer shell.
<u>T</u>	The period an element is in on the periodic table tells how many shells of electrons the element has.
<u>T</u>	An atom in group thirteen will have three valence electrons.
<u>T</u>	Metals are found on the left hand side of the periodic table.
<u>T</u>	In a decomposition reaction, one reactant becomes two products.
<u>F</u>	$\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$ is a balanced chemical equation.
<u>F</u>	Metal ions are positively charged and sometimes negatively charged.
<u>F</u>	Reactive elements can become more unstable when they form compounds.
<u>F</u>	Ionic compounds are named with the non-metal ion first, then the metal ion ending in 'ide'.
<u>F</u>	Covalent compounds are named using roman numerals.

2. Answer the following questions by filling in the diagram. (4 marks)

Period 1																		
Period 2																		
Period 3																		
Period 4																		
Period 5																		
Period 6																		
Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

- a) Label the alkaline earth metal group.
- b) Shade the column whose atoms like to gain one electrons.
- c) Identify the column that has 2 outer valence electrons.
- d) Using a hatch pattern identify the metalloids in the periodic table. E.g. 

3. For $3(\text{NH}_4)_3(\text{PO}_4)$ How many of each element are present? N: 9 H: 36 P: 3 O: 12 (4 marks)

4. Underline the ionic compounds. Circle the covalent compounds. (4 marks)a) CO_2 b) $\text{C}_{25}\text{H}_{52}$ c) AlBr_3 d) NaCl

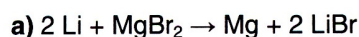
5. Write the name or the chemical formula for each compound. (8 marks)

a) CaO Calcium oxidee) P_2S_5 diphosphorus pentasulfideb) Mg_3P_2 Magnesium Phosphidef) CF_4 Carbon tetrafluoridec) sodium sulfate Na_2SO_4 g) sulfur hexachloride SCl_6 d) Copper (II) Bromide CuBr_2 h) dinitrogen monoxide N_2O

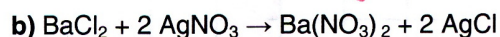
Match each reaction with the type of reaction. (6 marks)

A. $\text{BaCl}_2 + 2 \text{AgNO}_3 \rightarrow \text{Ba}(\text{NO}_3)_2 + 2 \text{AgCl}$	<u>F</u> synthesis
B. $2 \text{Al}_2\text{O}_3 \rightarrow 4 \text{Al} + 3 \text{O}_2$	<u>B</u> decomposition
C. $\text{NaOH} + \text{HCl} \rightarrow \text{H}_2\text{O} + \text{NaCl}$	<u>D</u> single displacement
D. $2 \text{Na} + \text{CaCl}_2 \rightarrow 2 \text{NaCl} + \text{Ca}$	<u>E</u> combustion
E. $\text{CH}_4 + 2 \text{O}_2 \rightarrow \text{CO}_2 + 2 \text{H}_2\text{O}$	<u>C</u> neutralization
F. $\text{N}_2 + 2 \text{O}_2 \rightarrow 2 \text{NO}_2$	<u>A</u> double displacement

7. Write the word equation for each reaction. (4 marks)



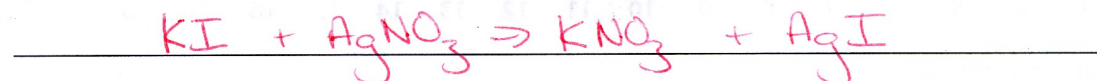
Lithium + Magnesium Bromide → Magnesium + Lithium Bromide



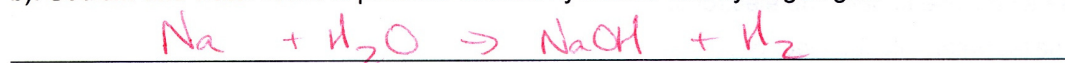
Barium chloride + Silver Nitrate → Barium Nitrate + Silver chloride

8. Write a skeleton chemical equation for each word equation. 6 marks

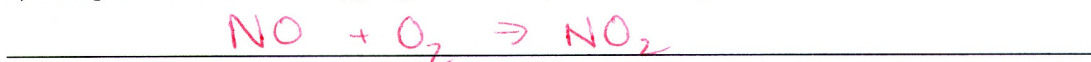
a) Potassium iodide and silver nitrate react to produce potassium nitrate and silver iodide



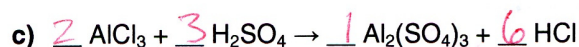
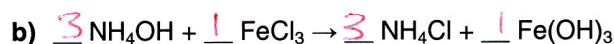
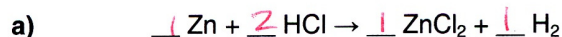
b). Sodium and water react to produce sodium hydroxide and hydrogen gas.



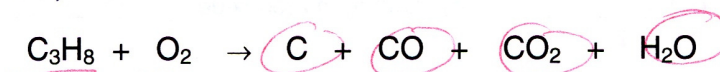
c) Nitrogen monoxide and oxygen gas react to produce nitrogen dioxide.



9. Balance each chemical equation. (9 marks)



10. Propane is a fuel used in barbecues. It has the chemical formula C_3H_8 . Assume propane undergoes an incomplete combustion reaction. The skeleton equation is shown below. Underline the reactants and circle the products. You do not need to balance the reaction. How can you tell this is an incomplete combustion reaction and not a complete combustion reaction (3 marks)



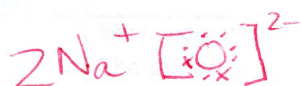
↑ presence of C + CO

B 71

11. Which is more reactive, an alkali metal or noble gas? Explain why. (2 marks)

Alkali metal wants to lose an electron
Noble gas stable.

12. a) Draw a model showing the electron dot diagram of Sodium and Oxygen. (2 marks)



b) Draw a model showing the structure of ammonia (NH₃). (2 marks)



13. Complete the table. Choose from the following answers:

metallic elements non metallic elements metalloids
yes no usually not solid liquid gas

Each answer may be used more than once, and each box in the table may contain more than one answer from the set above. (7 marks)

Properties of Ionic and Covalent Compounds

Compound	Formed from	Conducts electricity when dissolved in water?	Forms ions in solution?	State at room temperature (usually)
ionic	metals + Non-metals	yes	yes	solid
covalent	nonmetals		NO	gas

14. Identify the term that best matches the description or definition given. (7 marks)

a. acid

b. base

A

a. tastes sour

B

b. Baking soda is an example of this

A

c. Vinegar is an example of this.

B

d. feels slippery

A

e. H₂SO₄ is an example of this

A

f. reacts with metals to produce hydrogen gas

B

g. KOH is an example of this

Polyatomics

NAME	FORMULA	NAME	FORMULA
ammonium	NH ₄ ⁺	hydrogen sulfate	HSO ₄ ⁻
hydroxide	OH ⁻	hydrogen carbonate	HCO ₃ ⁻
nitrate	NO ₃ ⁻	phosphate	PO ₄ ³⁻
carbonate	CO ₃ ²⁻	sulfate	SO ₄ ²⁻