

**YEAR: 9**

**SUBJECT: SCIENCE**

**TEST: Reaction Types**

**TIME: 40 mins**

**QUESTIONS: Part A: Multiple Choice Questions (10 marks)**

**Part B: Short Answer Questions (19 marks)**

**TOTAL MARKS: 29 marks**

**DO NOT WRITE ON OR MARK THIS PAPER**

**SECTION ONE: Multiple Choice Questions (1 mark each)**

**Answer this section on the separate multiple – choice answer sheet**

1. Copper reacts with sulfur dioxide to form copper sulfide and oxygen gas. The reactants for this reaction are:

A) copper

B) copper and sulfur dioxide

C) copper sulfide and oxygen gas

D) copper, sulphur dioxide, copper sulfide and oxygen gas

1. Which of the following is the balanced chemical equation showing the corrosion of aluminium?

A) Al + O2 → Al2O3

B) 4Al + O2 → 2Al2O3

C) Al + 3O2 → 2Al2O3

D) 4Al + 3O2 → 2Al2O3

1. When petrol explodes, it releases energy in the form of heat and light. This reaction is an example of:

A) an endothermic reaction

B) an exothermic reaction

C) a neutralisation reaction

D) a corrosion reaction

1. Which of the following indicates that a combustion reaction is incomplete?

A) A visible flame is produced.

B) Heat is generated.

C) The reaction releases carbon dioxide gas.

1. D) The reaction releases carbon in the form of soot or smoke.
2. Which of the following reactions shows the rusting of iron?

A) 2Cu + H2O + CO2 + O2 → Cu(OH)2 + CuCO3

B) 2Ag + H2S → Ag2S + H2

C) 2Na + 2H2O → 2NaOH + H2

D) 4Fe + 3O2 + 2H2O → 2Fe2O3.H2

1. An acid reacts with a metal. Identify its products.

A) a salt + hydrogen gas

B) a salt + water

C) a salt + water + carbon dioxide

1. D) glucose + oxygen gas
2. An acid reacts with a base in a neutralisation reaction. Identify its products.

A) a salt + hydrogen gas

B) a salt + water

C) a salt + water + carbon dioxide

D) water + carbon dioxide

1. The reaction that releases energy for your cells to use is called:

A) photosynthesis

B) aerobic respiration

C) corrosion

D) neutralisation

1. Which of the following equations correctly summarises what happens in photosynthesis?

A) CO2 + H2O C6H12O6 + O2

sunlight

chlorophyll

B) 6CO2 + 6H2O C6H12O6 + 6O2

sunlight

chlorophyll

C) 6CO2 + 6H2O → C6H12O6 + 6O2

sunlight

chlorophyll

D)C6H12O6 + 6O2 6CO2 + 6H2O + energy

1. Photosynthesis and aerobic respiration might appear to be opposite processes but they differ in many ways. Four differences are listed below. One is WRONG. Which is it?

A) Each proceeds via different steps.

B) Photosynthesis occurs in all cells of all living things while aerobic respiration

only occurs in the chloroplasts in the cells of green plants.

C) Photosynthesis happens only during the day while aerobic respiration happens

continuously.

D) The enzymes in photosynthesis speed up reactions while the enzymes in

aerobic respiration slow them down.



**SEMESTER ONE 2016**

**Reaction Types:**

**ANSWER BOOKLET**

**NAME:**

**FORM:** **DATE:**

Multiple Choice Short Answer Total

**/29**

**/19**

**/10**

**SECTION ONE:** Multiple choice answers

Cross (X) through the correct answer.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | a | **X** | c | d |
| 2 | a | b | c | **X** |
| 3 | a | **X** | c | d |
| 4 | a | b | c | **X** |
| 5 | a | b | c | **X** |
| 6 | **X** | b | c | d |
| 7 | a | **X** | c | d |
| 8 | a | **X** | c | d |
| 9 | a | **X** | c | d |
| 10 | a | **X** | c | d |

**SECTION TWO: Short Answer (19 marks)**

Answer the questions in the spaces provided.

**Question 11 (4 marks)**

Ethane (C2H6) reacts with oxygen gas (O2) to form carbon dioxide (CO­2) and water vapour (H2O).

**a)** **Identify** the reactants of this reaction.

**b)** **Identify** the products of this reaction.

**c)** **Construct** a word equation for this reaction.

**d)** **Construct** an unbalanced formula equation for this reaction.

**a** Reactants = ethane + oxygen gas – 1 MARK

**b** Products = carbon dioxide + water vapour – 1 MARK

**c** ethane + oxygen → carbon dioxide + water vapour – 1 MARK

**d** C2H6 + O2 → CO2 + H2O – 1 MARK

**Question 12 (4 marks)**

Magnesium burns in oxygen gas to form magnesium oxide. Its unbalanced formula equation is:

Mg + O2 → MgO

**a)** **Use** this equation to **identify** the chemical formula for magnesium oxide.

**b)** **Construct** a word equation describing this reaction.

**c)** **Identify** which element (Mg or O) is unbalanced in the above equation.

**d)** **Balance** the above equation.

**a** MgO – 1 MARK

**b** Magnesium + oxygen gas → magnesium oxide – 1 MARK

**c** O is unbalanced – 1 MARK

**d** 2Mg + O2 → 2MgO – 1 MARK

**Question 13 (2 marks)**

**Explain** how the burning of magnesium in oxygen could be classified as a combustion reaction **AND** a corrosion reaction.

Combustion is the combination of a substance with oxygen **(1 MARK).** Corrosion is the breakdown of a metal by the reaction with another element **(1 MARK).**

**Question 14 (4 marks)**

Two things can happen to an iron/steel shipwreck when it settles on the ocean floor. It can stay on the floor OR it can sink into the mud. If it stays on the ocean floor, it will rust. If covered by mud, it is sometimes preserved without any rusting.

The rusting of iron is shown in the equation:

4Fe + 3O2 + 2H2O → 2Fe2O3.H2O

**a)** **Use** this equation to **identify** the chemical formula for rust.

**b)** **List** the three reactants needed for rust to form.

**c)** **Propose** a reason why iron might not rust if the shipwreck is covered by mud.

**a** Fe2O3.H2O – 1 MARK

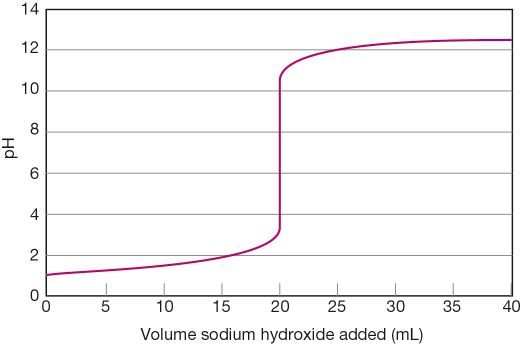
**b** Iron (Fe), oxygen gas (O2) and water (H2O). – 1 MARK

**c** Mud is wet but sometimes it has no oxygen in it **(1 MARK)**. Hence one of the reactants is missing. **(1 MARK)**

**Question 15 (5 marks)**

Use this graph to answer the following questions:

Increasing volumes of sodium hydroxide (NaOH) were added to a solution of hydrochloric acid (HCl). As it was added, the pH changed according to the graph shown below.



1. State the pH of the solution at the start of the experiment.
2. Determine the volume of sodium hydroxide that is needed to be added to exactly neutralise the acid.
3. Determine the pH when 16 mL of sodium hydroxide was added.
4. Determine the total volume of sodium hydroxide added in the experiment.
5. At the end of the above experiment, what type of solution was formed?
6. **pH of 1 – 1 MARK**
7. **20mL – 1 MARK**
8. **pH 2 – 1 MARK**
9. **40 mL – 1 MARK**
10. **The solution becomes ALKALINE – 1 MARK**

**END OF TEST**

Please go back and check your work / complete any unanswered questions.