



Subject: Grade 9 Natural Sciences

Topic: Reactions of metals with oxygen

Total: 30 Marks

1. false

2 marks

Explanation:

Rusting is a **slow** reaction of iron with oxygen in the presence of water.

Only iron or alloys that contain iron can rust, but other metals can corrode in similar ways.

Rusting occurs at the surface of the iron that is exposed to the air and water (moisture).

2. B

3 marks

Explanation:

Beryllium oxide is the product - one atom of beryllium and one atom of oxygen joined together chemically.

According to the balanced equation there are two molecules of beryllium oxide.

B represents 2 molecules of beryllium oxide.

3. B: CoO

4 marks

Explanation:

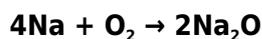
The chemical symbol for copper is Cu, and not Co.

Co is the chemical symbol for cobalt.

4. $4\text{Na} + \text{O}_2 \rightarrow 2\text{Na}_2\text{O}$

3 marks

Explanation:



Oxygen on its own will appear as a diatomic molecule (O_2).

The amount of molecules of an element must be equal on either side of the arrow.

Left hand side: four sodium atoms, two oxygen atoms.

Right hand side: four sodium atoms, two oxygen atoms.

This proves that the chemical equation is balanced.

5. Combustion | heat and light

4 marks

Explanation:

Combustion is the chemical term for a process known more commonly as burning. The release of heat can produce light in the form of a flame.

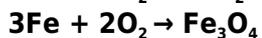
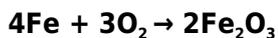
6. C: magnetite

4 marks

Explanation:

Iron and oxygen can combine in different ways. During the combustion of iron in air, Fe_2O_3 and Fe_3O_4 are formed.

The balanced reactions are as follows:



7. false

2 marks

Explanation:

Some metals burn more easily than others in oxygen.

Not all metals react with the oxygen in the air to form metal oxides, because some metals are too unreactive.

8. corrosion | Iron plating

4 marks

Explanation:

Any method that prevents water from touching the iron is a preventative method.

Painting the iron and adding a layer of oil will prevent the rusting of iron.

Iron plating is not a method to prevent corrosion. If you were iron plating, you would be adding a thin layer of iron to an object, which would defeat the purpose.

9. true

2 marks

Explanation:

Magnesium alloys are used as another way of preventing iron/steel from rusting.

Magnesium alloys are used on ships and pipelines, since they are always in contact with water.

10. false

2 marks

Explanation:

Metals in Group 1 have the formula M_2O .

The metal oxides from Group 1 are Li_2O , Na_2O and K_2O .

Metals in Group 2 have the formula MO .

Total: 30 Marks