



## Section A:

1. Which is the correct definition of a limiting reactant?

Tick one box.

The reactant that will make less product

☐

The reactant that will run out first

☐

The reactant that there is more of

☐

2. How can the reactant that is not the limiting reactant be described?

Tick one box.

There is too much of it

☐

It is in the correct mole ratio

☐

It is in excess

☐

3. Balance this equation:

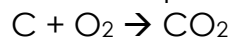


4. Explain why chemical equations have to be balanced.

---

---

5. Carbon reacts with oxygen, which can be represented by the following equation:

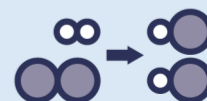


- a. Calculate the relative formula mass of  $\text{CO}_2$ .

---

- b. If there are 0.5 moles of carbon and 0.1 moles of oxygen present, which is the limiting reactant?

---



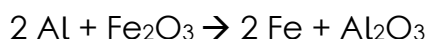


For any calculations, round final answers to 2 decimal places.

Section B

6. A scientist has a mixture of aluminium and iron oxide. It contains 1.5 kg of aluminium and 2.8 kg of iron oxide.

The equation for the reaction is:



- a. Use calculations to identify which is the limiting reactant.

---

---

---

---

---

- b. Use your answer to calculate the maximum mass of iron that could be obtained.

---

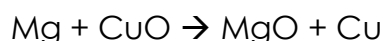
---

---

---

---

7. Magnesium can be used to displace copper from its ore. The equation for the reaction is:



- a. Use calculations to identify which is the limiting reactant when a reaction mixture contains 750 g of magnesium and 750 g of copper oxide.

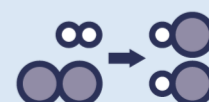
---

---

---

---

---



- b. Use your answer to calculate the maximum mass of copper that could be obtained.

---

---

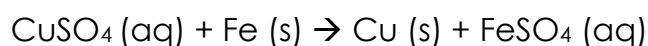
---

---

---

---

8. Iron can be used to displace copper from copper sulfate solution. The equation for the reaction is:



Calculate the mass of iron needed to displace all the copper from 100 cm<sup>3</sup> of copper sulfate solution.

The concentration of the copper sulfate solution is 50 g/dm<sup>3</sup>.

---

---

---

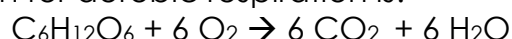
---

---

---

### Section C

9. The chemical equation for aerobic respiration is:



- Calculate the relative formula mass of glucose.
- A muscle tissue contains 40 µg of glucose and 75 µg of oxygen. Calculate the number of moles of each present.
- Identify which is the limiting reactant.
- Calculate the mass of water that could be made.
- Explain what happens when the muscle tissue cannot get enough oxygen.
- Compare the two processes of respiration.

