

(Using moles to calculate masses)

Q1. (2019)

Calculate the volume of 150 kg of chlorine gas at room temperature and pressure.

The volume of one mole of any gas at room temperature and pressure is 24.0 dm^3

Relative formula mass (M_r): $\text{Cl}_2 = 71$

[2 marks]

Volume = _____ dm^3

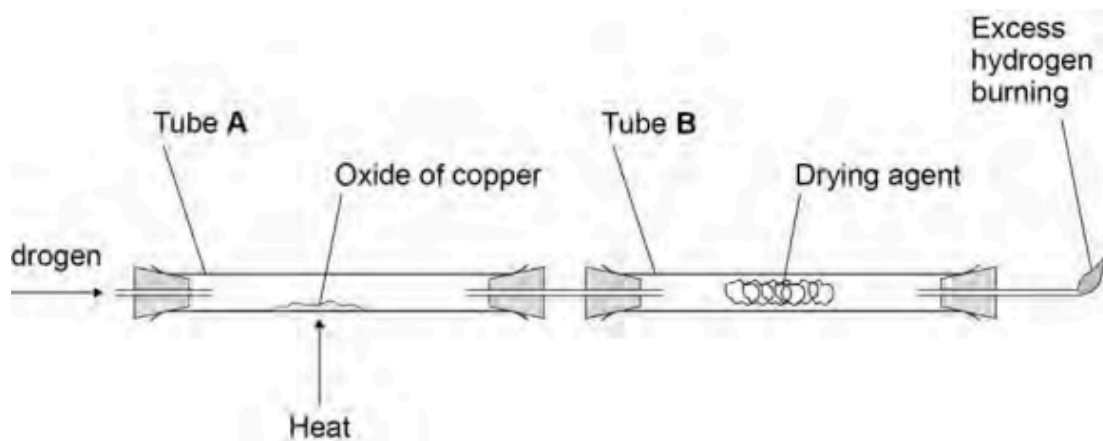
Q2. a). (2019)

Copper forms two oxides, Cu_2O and CuO

A teacher investigated an oxide of copper.

Figure 10 shows the apparatus.

Figure 10



This is the method used.

1. Weigh empty tube **A**.
2. Add some of the oxide of copper to tube **A**.
3. Weigh tube **A** and the oxide of copper.
4. Weigh tube **B** and drying agent.
5. Pass hydrogen through the apparatus and light the flame at the end.
6. Heat tube **A** for 2 minutes.
7. Reweigh tube **A** and contents.
8. Repeat steps 5 to 7 until the mass no longer changes.
9. Reweigh tube **B** and contents.
10. Repeat steps 1 to 9 with different masses of the oxide of copper.

Suggest **one** reason why step 8 is needed.

[1 mark]

Q2. b). (2019)

Suggest **one** reason why step 8 is needed.

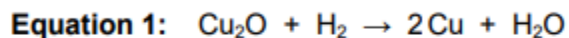
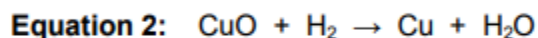
[1 mark]

Q3. (2019)

The teacher repeated the experiment with a different sample of the oxide of copper.

The teacher found that the oxide of copper produced 2.54 g of copper and 0.72 g of water.

Two possible equations for the reaction are:



Determine which is the correct equation for the reaction in the teacher's experiment.

Relative atomic masses (A_r): $\text{H} = 1$ $\text{O} = 16$ $\text{Cu} = 63.5$

[3 marks]

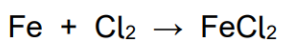
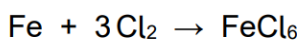
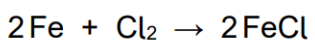
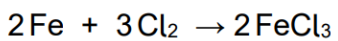
Q4. (2024)

When iron reacts with chlorine, 0.12 mol of iron reacts with 0.18 mol of chlorine (Cl_2).

Which is the correct equation for the reaction?

[1 mark]

Tick (✓) **one** box.

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