

GCSE Chemistry A (Gateway Science)

J248/01 Chemistry A C1-C3 and C7 (Foundation Tier)

Question Set 8

1 Two students, **A** and **B**, want to make some solid zinc sulfate. They make some predictions.

You can react sulfuric acid with zinc metal or zinc carbonate to make zinc sulfate. Both reactions make hydrogen.

Student **A** says

You can react hydrochloric acid with zinc metal or zinc carbonate to make zinc sulfate. The reaction with zinc metal makes hydrogen and the reaction with zinc carbonate makes carbon dioxide.

Student **B** says

(a) Comment on how correct **both** predictions are.

[4]

(b) (i) Zinc oxide, ZnO , is reacted with nitric acid, HNO_3 .

The reaction makes zinc nitrate, $\text{Zn}(\text{NO}_3)_2$, and water, H_2O .

Write a **balanced symbol** equation for this reaction.

[2]

(ii) A student suggests this method for preparing zinc nitrate.

1. Measure 50 cm^3 of dilute nitric acid into a beaker.
2. Add one spatula measure of zinc oxide.
3. Heat the mixture until crystals of zinc nitrate are made.

Her method will **not** make a pure dry sample of zinc nitrate.

What improvements should she make to the method to make sure that:

- the reaction is complete
- the zinc nitrate can be separated from the nitric acid and the zinc oxide?

Explain your answer.

[4]

Total Marks for Question Set 8: 10



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