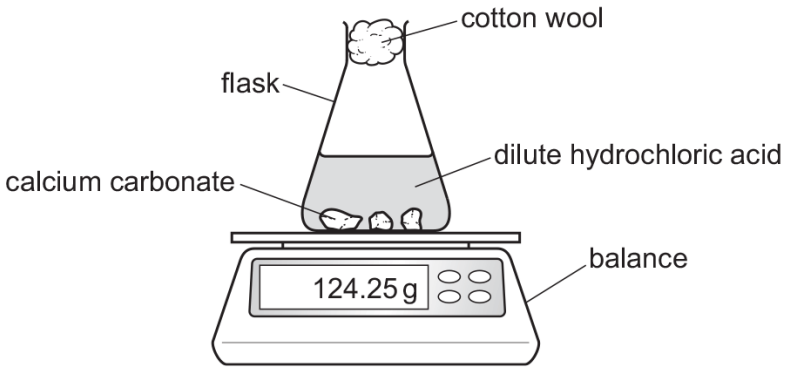
3.1 Stoichiometry

01. 0620_m22_qp_62 Q: 1

Calcium carbonate reacts with dilute hydrochloric acid. The products of the reaction are aqueous calcium chloride, water and carbon dioxide gas.

A student investigated the rate of the reaction between calcium carbonate and dilute hydrochloric acid using the apparatus shown.



The mass of the flask and contents was recorded every 30 seconds.
When the reaction stopped there were still small pieces of calcium carbonate in the flask.

(a) State what happens to the reading on the balance as the reaction takes place.
Explain your answer.

reading on balance .....

explanation .....

.....
[2]

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(b) There is a piece of cotton wool in the neck of the flask.

(i) Suggest why a bung is **not** used in the neck of the flask.

.....

..... [1]

(ii) Suggest why cotton wool is placed in the neck of the flask rather than leaving the flask open.

.....

..... [1]

(c) State which reactant is in excess.

..... [1]

(d) Describe how crystals of calcium chloride can be obtained from the mixture left in the flask after the reaction has stopped.

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..... [3]

[Total: 8]

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Question	Answer	Marks
(a)	decreases / goes down	1
	gas / carbon dioxide escapes / lost / released (from flask)	1
(b)(i)	gas/carbon dioxide cannot escape (so the mass will not change when a bung is used)	1
(b)(ii)	trap / prevent / stop acid spray	1
(c)	calcium carbonate	1
(d)	filter (to remove calcium carbonate)	1
	heat (to evaporate water)	1
	until crystals start to form / point of crystallisation / until saturated (then leave to cool) / until half evaporated	1

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