

## 2024 Higher Chemistry Paper 1 - Q25

Section: Researching Chemistry

Topic: General Practical Techniques (Gas Collection)

Question summary (Q25):

Carbon dioxide can be produced by the reaction:



Which method is most suitable for isolating the  $\text{CO}_2$ ?

Worked Solution:

- Option A: Bubbling through calcium hydroxide → test for  $\text{CO}_2$ , not collection.
  - Option B: Collection over water → suitable for gases like  $\text{CO}_2$  that are only moderately soluble in water.
  - Option C: Evaporation → not relevant for gases.
  - Option D: Distillation → used for separating liquids with different boiling points, not gases from reactions.
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- Therefore the best method is collection over water.

Final Answer: B — Collection over water

Revision Tips:

- Choice of gas collection method depends on solubility and density of the gas.
- Over water: good for gases not too soluble ( $\text{CO}_2$ ,  $\text{O}_2$ ,  $\text{H}_2$ ).
- Downward delivery: good for gases denser than air ( $\text{CO}_2$ ,  $\text{Cl}_2$ ).
- Upward delivery: good for gases lighter than air ( $\text{H}_2$ ,  $\text{NH}_3$ ).