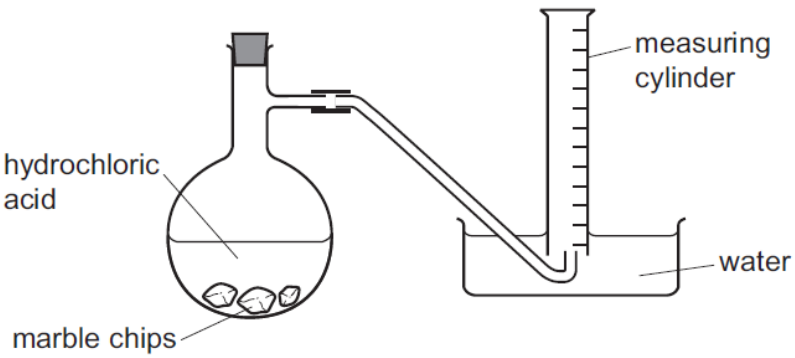
1. Nov/2021/Paper_11/No.2

A student follows the rate of the reaction between marble chips, $CaCO_3$, and dilute hydrochloric acid.

$$CaCO_3 + 2HCl \rightarrow CaCl_2 + CO_2 + H_2O$$

Which diagrams show apparatus that, with a stopwatch, is suitable for this experiment?

1



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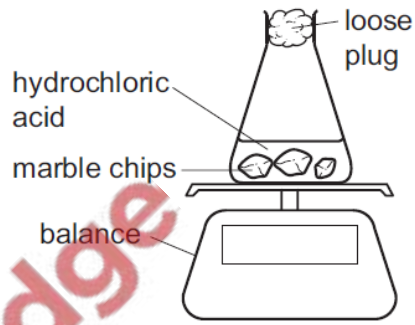

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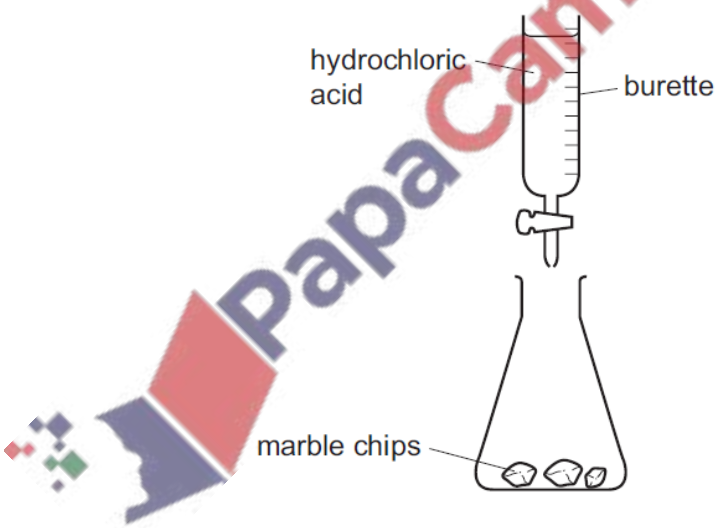


A 1 only **B** 1 and 2 only **C** 2 and 3 only **D** 1, 2 and 3

2. Nov/2021/Paper_11/No.3

A mixture of three liquids is separated by fractional distillation.

Which statements are correct?

1 The mixture boils at constant temperature throughout the separation.

2 The temperature at which the mixture boils increases during the separation.

3 The liquid with the highest boiling point is collected first.

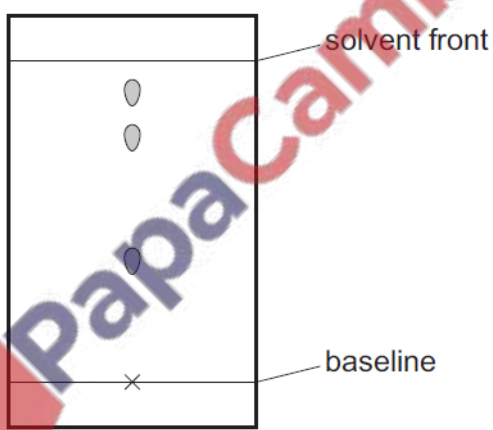
4 The liquid with the lowest boiling point is collected first.

A 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

3. Nov/2021/Paper_11/No.4

A mixture of four coloured dyes is analysed by chromatography.

The result is shown.



Which change will allow the four dyes to be seen?

A Measure the R_f values of the spots carefully.

B Run the chromatogram for a longer time.

C Run the chromatogram using a different solvent.

D Use a locating agent.

4. Nov/2021/Paper_11/No.1

A student makes aqueous copper(II) sulfate. The student adds an excess of copper(II) oxide powder to warm sulfuric acid and stirs the mixture.

Which apparatus should be used to separate aqueous copper(II) sulfate from the excess copper(II) oxide?

A burette

B distillation apparatus

C filter funnel and paper

D measuring cylinder

5. Nov/2021/Paper_12/No.1

In a titration, 25.0 cm^3 of aqueous sodium hydroxide is transferred into a conical flask. A few drops of indicator are added. Dilute hydrochloric acid is then added to the flask until the end-point is reached.

Which pieces of apparatus are used to measure volume in this experiment?

	to measure dilute hydrochloric acid	to measure aqueous sodium hydroxide
A	burette	beaker
B	burette	pipette
C	pipette	pipette
D	pipette	beaker

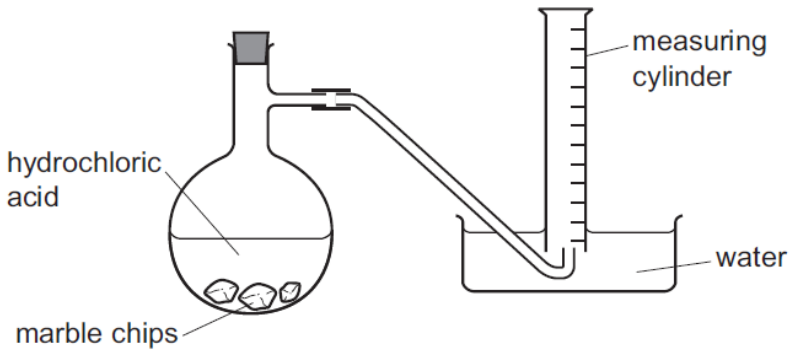
6. Nov/2021/Paper_12/No.1

A student follows the rate of the reaction between marble chips, $CaCO_3$, and dilute hydrochloric acid.

$$CaCO_3 + 2HCl \rightarrow CaCl_2 + CO_2 + H_2O$$

Which diagrams show apparatus that, with a stopwatch, is suitable for this experiment?

1



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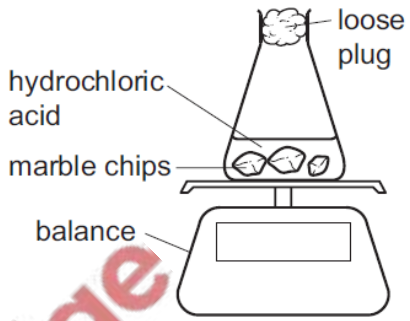

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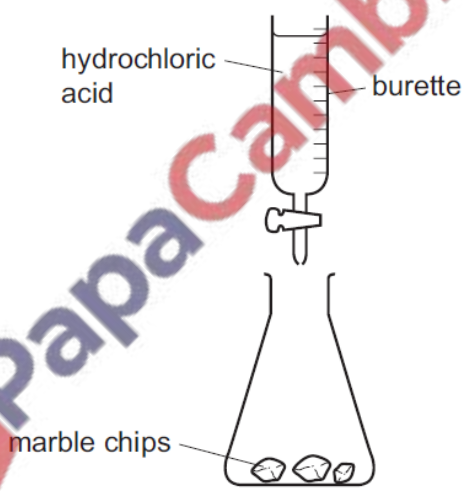
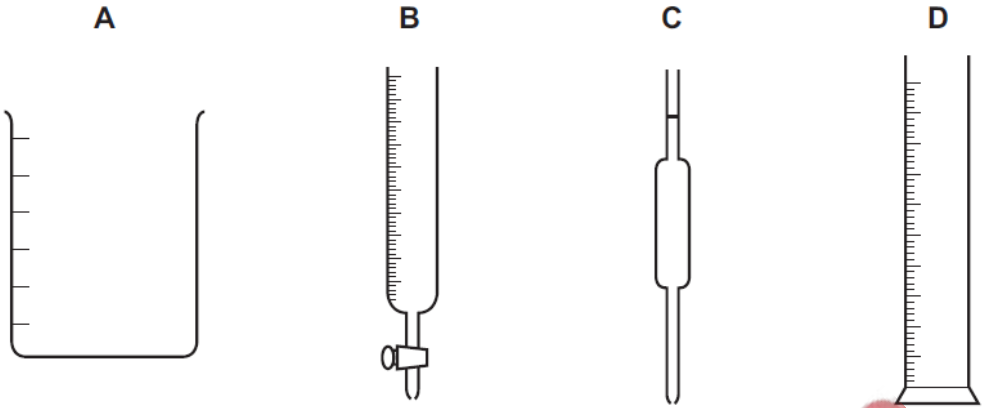


A 1 only **B** 1 and 2 only **C** 2 and 3 only **D** 1, 2 and 3

7. Jun/2021/Paper_11/No.1

A student has to measure 28.2 cm^3 of aqueous sodium bromide.

Which piece of apparatus should the student select?



8. Jun/2021/Paper_11/No.3

Which sequence of procedures is used to separate a pure, dry sample of hydrated copper(II) sulfate, $CuSO_4 \cdot 5H_2O$, from a mixture containing hydrated copper(II) sulfate and calcium carbonate, $CaCO_3$?

A dissolve in water → distillation → crystallisation

B dissolve in water → filtration → crystallisation

C distillation → crystallisation → heating to remove all water

D fractional distillation → filtration → heating to remove all water