

O-Level Chemistry

Paper 1

Unsolved Topical

Past Papers With Marking Scheme

According to New Syllabus (2023-2025)

2014-2021

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PREFACE

Excellence in learning cannot be claimed without application of concepts in a dexterous way. In this regard one of the logical approach is to start in chunks; like chapter wise learning and applying the concept on exam based questions.

This booklet provides an opportunity to candidates to practice topic wise questions from previous years to the latest. Extensive working of Team MS Books has tried to take this booklet to perfection by collaborating with top of the line teachers.

We have added answer key / marks scheme at the end of each topic for the candidate to compare the his/her answer to the best.

MS Books strives to maintain actual spacing between consecutive questions and within options as per CAIE format which gives students a more realistic feel of attempting question.

Review, feedback and contribution in this booklet by various competent teachers of a subject belonging to renowned school chains make it most valuable resource and tool for both teachers and students.

With all belief in strength of this resource material I can confidently claim that it is worth in achieving brilliance.

Our sincere thanks and gratification to **Mr. Kamal Ahmad** who took out special time to help compile and manage this booklet. We would also like to appreciate chemistry faculty for reviewing and indorsing it.

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Experimental Design

Q24/11/M/J/14

- 1 A student mixed together aqueous solutions of **Y** and **Z**. A white precipitate formed. Which could **not** be **Y** and **Z**?

| | Y | Z |
|---|-------------------|------------------|
| A | hydrochloric acid | silver nitrate |
| B | hydrochloric acid | sodium nitrate |
| C | sodium chloride | lead(II) nitrate |
| D | sodium chloride | silver nitrate |

Q1/12/M/J/14

- 2 Which process is suitable for obtaining the water from an aqueous solution of sugar?

- A crystallisation C filtration
B distillation D use of a separating funnel

Q3/11/O/N/14

- 3 What is the correct sequence for obtaining pure salt from a mixture of sand and salt?

- A add water, evaporate C add water, filter, evaporate
B add water, filter D filter, add water, evaporate

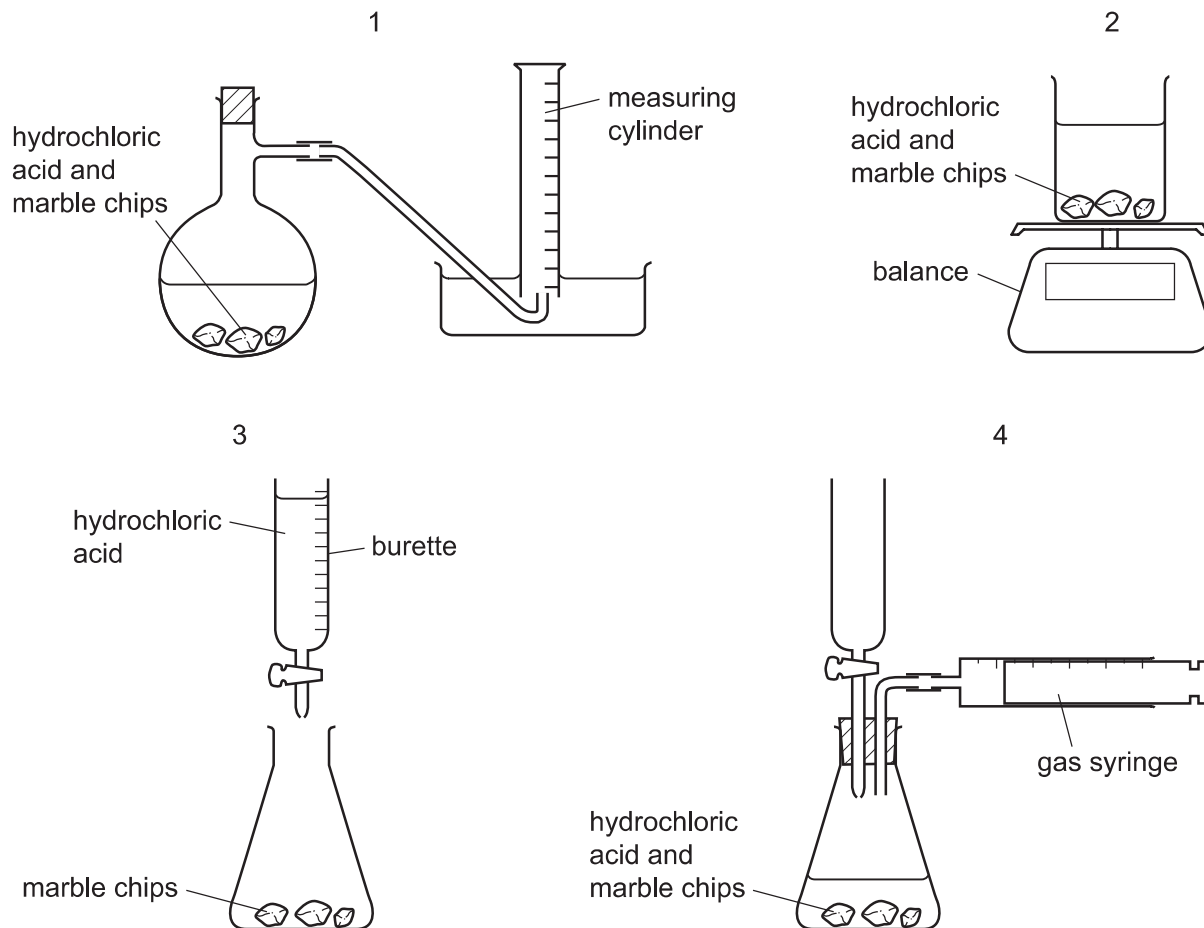
MS
BOOKS

Q1/12/O/N/14

- 4 A student wants to carry out an experiment to follow the rate of the reaction between hydrochloric acid and marble chips.



Which diagrams show apparatus that is suitable for this experiment?



- A** 1 and 2 only **B** 1 and 3 only **C** 1 and 4 only **D** 1, 2 and 4

Q2/12/O/N/14

- 5 Solutions of lead(II) nitrate and potassium iodide are mixed together in the preparation of lead(II) iodide.

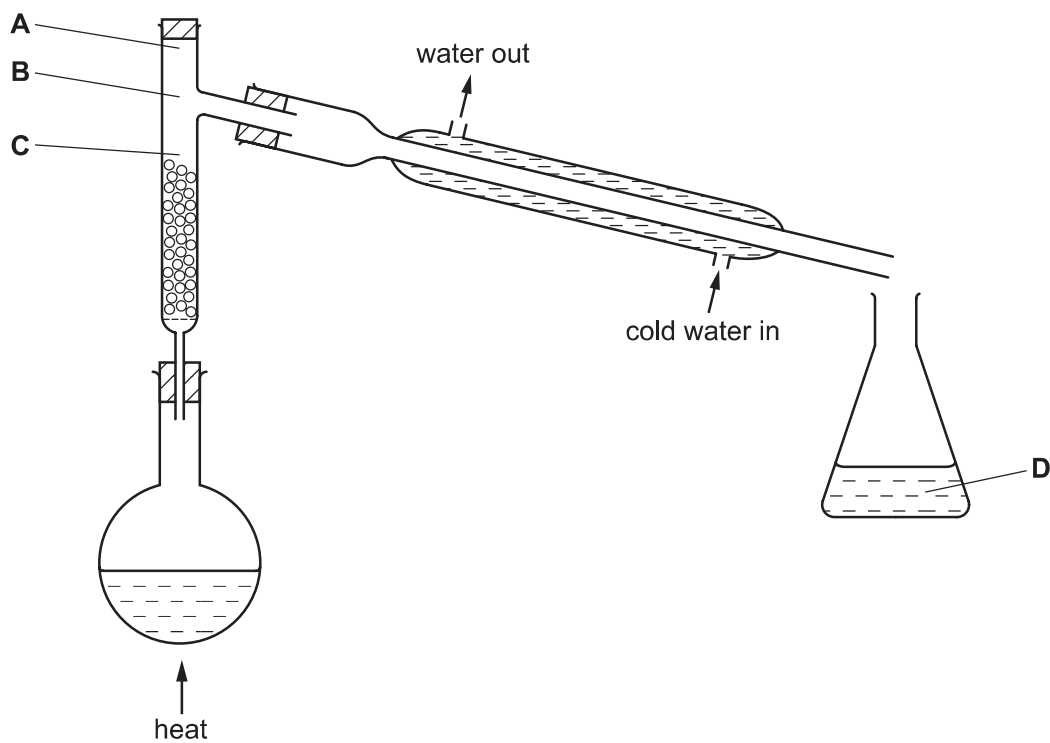
Which method can be used to separate the lead(II) iodide from the mixture?

- A** crystallisation **B** distillation **C** evaporation **D** filtration

Q1/11/M/J/15

- 6 The fractional distillation apparatus shown is being used to separate a mixture of two liquids. A thermometer is missing from the apparatus.

Where should the bulb of the thermometer be placed?



Q2/12/M/J/15

- 7 The concentration of aqueous sodium carbonate can be found by reaction with hydrochloric acid of known concentration using the indicator methyl orange.

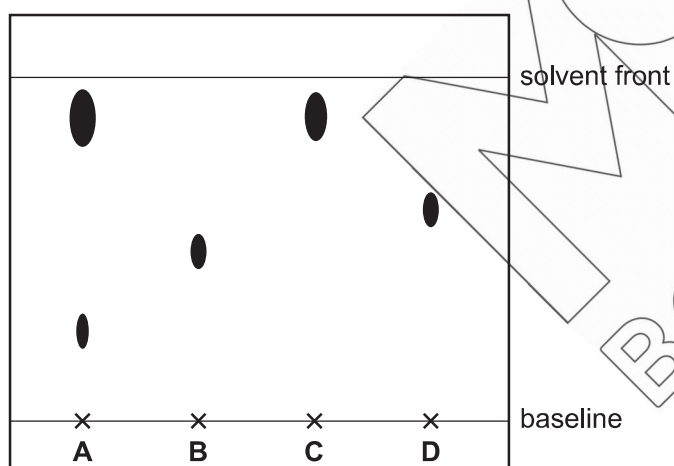
Which items of equipment are needed?

- | | |
|---|--|
| A burette, measuring cylinder, gas syringe | C burette, pipette, conical flask |
| B burette, measuring cylinder, thermometer | D burette, pipette, stopwatch |

Q3/12/M/J/16

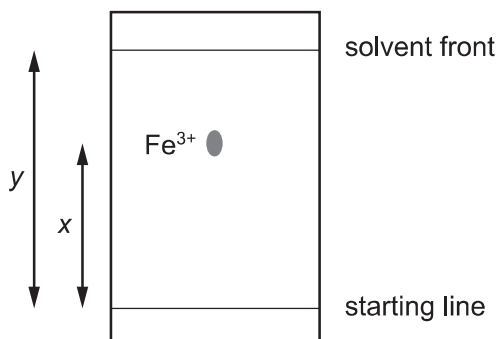
- 8 Q is a pure sample of a substance that has a single R_f value of 0.9.

In the chromatogram shown, which letter represents Q?



Q3/11/O/N/16

- 9 A paper chromatography experiment is carried out to find an R_f value for $\text{Fe}^{3+}(\text{aq})$. The result is shown.



To make the spot containing $\text{Fe}^{3+}(\text{aq})$ more visible, the paper is sprayed with aqueous sodium hydroxide so that a precipitate of iron(III) hydroxide forms.

Under the conditions of the experiment, the R_f of $\text{Fe}^{3+}(\text{aq})$ is given by1..... and the colour of the precipitate is2..... .

Which row correctly completes gaps 1 and 2?

| | gap 1 | gap 2 |
|----------|---------------|-----------|
| A | $\frac{x}{y}$ | red-brown |
| B | $\frac{x}{y}$ | green |
| C | $\frac{y}{x}$ | red-brown |
| D | $\frac{y}{x}$ | green |

Q4/12/O/N/16

- 10 Benzene and cyclohexane are both flammable liquids. They are able to mix with each other without separating into two layers. They have very similar boiling points. It is difficult to separate a mixture of these two liquids by fractional distillation.

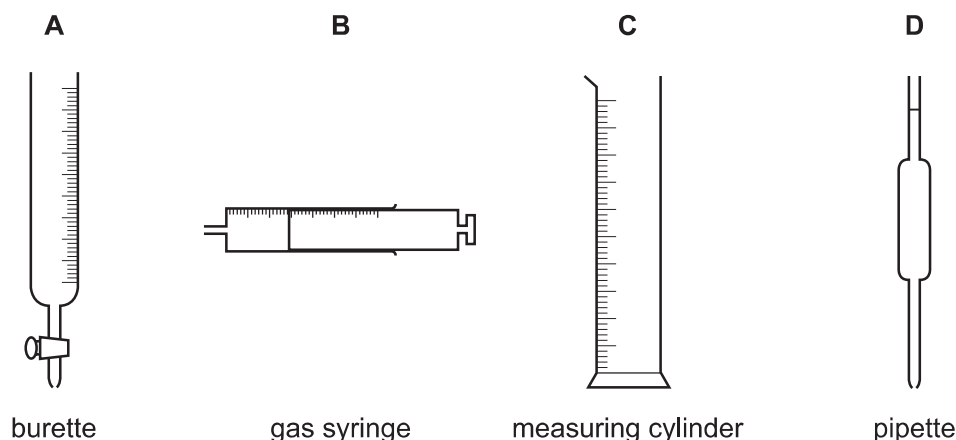
Why is it difficult to separate a mixture of benzene and cyclohexane by fractional distillation?

- A** They are both flammable.
- B** They are both liquids.
- C** They have very similar boiling points.
- D** They mix with each other completely.

Q1/12/M/J/17

- 11 The diagram shows four pieces of apparatus that are used to measure the volume of a gas or liquid.

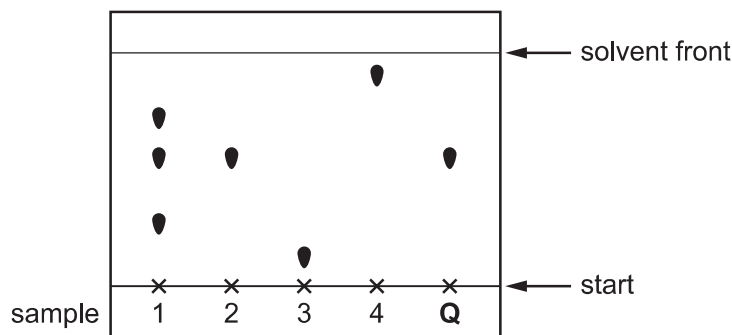
Which piece of apparatus should always be filled to the same level?



Q6/12/M/J/17

- 12 Four samples are spotted onto chromatography paper. It is known that one of these samples is pure compound **Q**. A separate sample of pure compound **Q** is also spotted onto the paper. The paper is placed in a solvent.

The diagram shows the chromatogram produced.



Which statement is correct?

- A Sample 2 has travelled the furthest and sample 3 is pure compound **Q**.
B Sample 3 has travelled the furthest and sample 2 is pure compound **Q**.
C Sample 4 has travelled the furthest and sample 1 is pure compound **Q**.
D Sample 4 has travelled the furthest and sample 2 is pure compound **Q**.

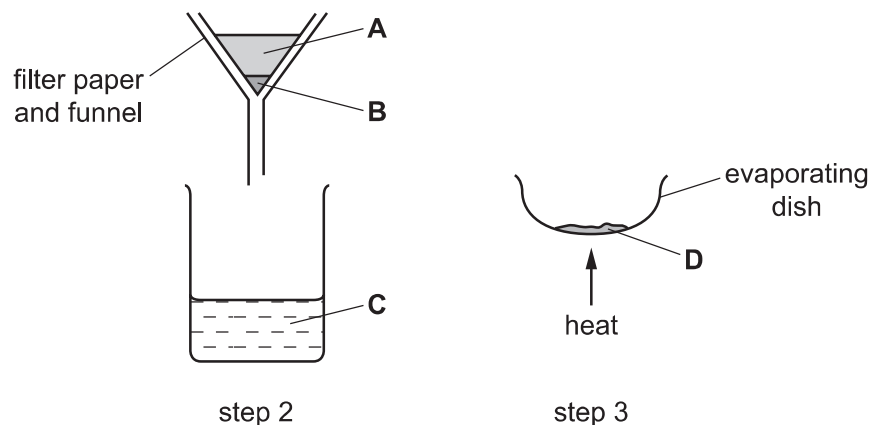
Q1/12/O/N/17

- 13 A mixture of sand and sodium chloride can be separated in three steps.

Step 1 is to add water to the mixture.

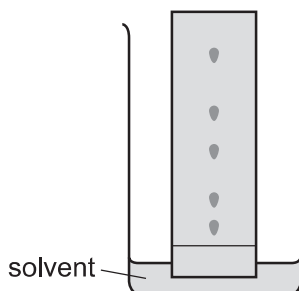
The diagram shows step 2 and step 3.

Where is pure sodium chloride collected?



Q5/12/O/N/17

- 14 A chemist wishes to separate and identify a mixture of substances using paper chromatography. The diagram shows the apparatus used. The solvent is water.



The solvent front is allowed to reach the top of the paper before the chemist removes the paper from the solvent.

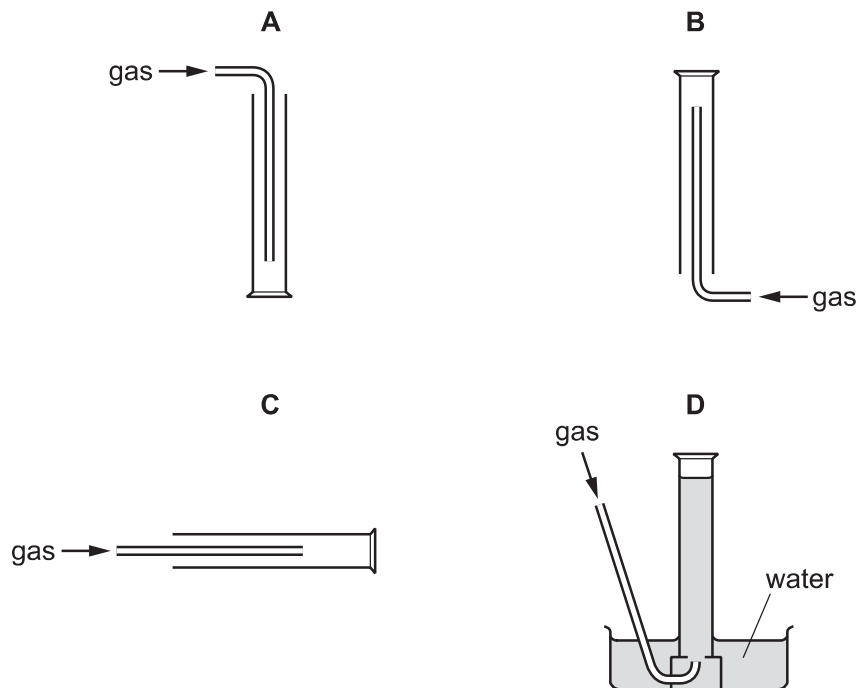
Which problem does this cause?

- A This causes the spot nearest the bottom of the paper to catch up with the spot above it.
- B This makes it impossible to calculate R_f values.
- C This makes it impossible to use a locating agent.
- D This results in a safety hazard caused by solvent fumes.

Q1/11/M/J/18

15 A gas is less dense than air and dissolves in water.

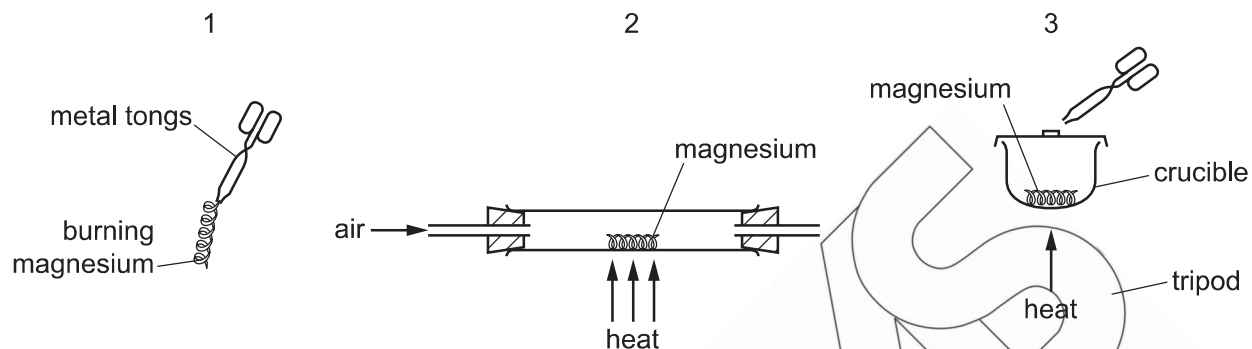
Which diagram shows the correct method of collecting this gas?



Q1/12/O/N/18

16 When heated, magnesium reacts with oxygen in the air to form magnesium oxide, a white powder.

A student investigates the change in mass that occurs during this reaction. He is given a balance and the three sets of apparatus shown.



Which sets of apparatus are suitable for this investigation?

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

ANSWER KEYS

| Sr # | Key | Sr # | Key |
|------|-----|------|-----|
| 1. | B | 21. | B |
| 2. | B | 22. | |
| 3. | C | 23. | |
| 4. | D | 24. | |
| 5. | D | 25. | |
| 6. | B | 26. | |
| 7. | C | 27. | |
| 8. | C | 28. | |
| 9. | A | 29. | |
| 10. | C | 30. | |
| 11. | D | 31. | |
| 12. | D | 32. | |
| 13. | D | 33. | |
| 14. | B | 34. | |
| 15. | B | 35. | |
| 16. | C | 36. | |
| 17. | B | 37. | |
| 18. | C | 38. | |
| 19. | D | 39. | |
| 20. | A | 40. | |

