

Name:	Target Grade:	Actual Grade:
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## EXPERIMENTAL TECHNIQUES MCQ and STRUCTURED QUESTIONS

**READ THESE INSTRUCTIONS FIRST**

### INSTRUCTIONS TO CANDIDATES

1. Find a quiet, comfortable spot free place from distractions.
2. Spend one minute on each mark.
3. Time yourself for every single question.
4. Every chapter has their own question types. Ensure that you know the different question type for each chapter.
5. Make a conscientious effort to remember your mistakes, especially in terms of answering techniques. E.g Take a picture for the mistakes that you made, keep it in a photo album, and revise it over and over again.
6. Highlight question types that you tend to keep making mistakes and review them nearing exams.
7. Always review the common questions and question type that you tend to make mistakes nearing exams.
8. During exams, classify the question type and recall what you have learnt, how you need to analyse the questions for the different question type, what you need to take note of and answer with the correct answering techniques!

✨ Wishing you all the best for this test!

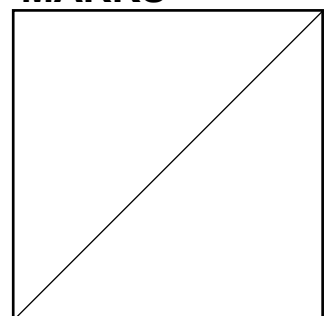
You've got this!

💡 With lots of love,  
Bright Culture 🧡

If you are struggling in this paper, means you need to work harder!

If you need any professional guidance and further advice on how to advance, feel free to WhatsApp us at 91870820 or find us at [www.bright-culture.com/](http://www.bright-culture.com/). We are committed to connect you to your future to reach your goals.

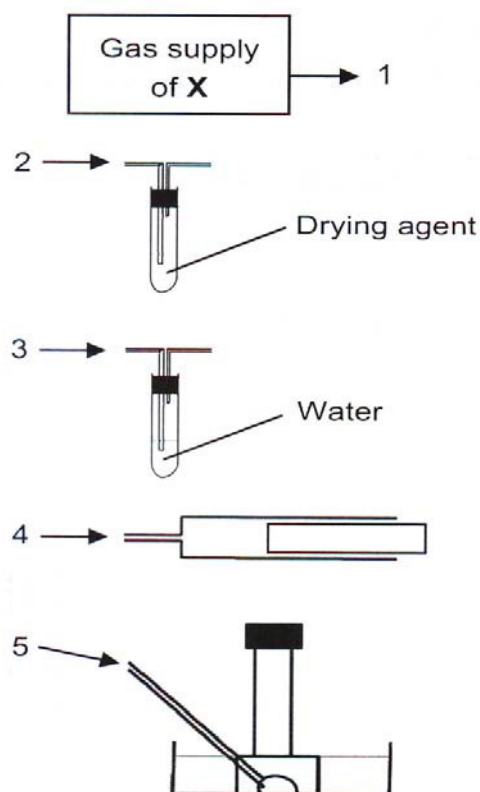
**MARKS**



**EXPERIMENTAL TECHNIQUES MCQ**

**Paper 1**

- 1 A gas **X** is insoluble in water and less dense than air. An impure supply of **X** contains water vapour and a water-soluble impurity.



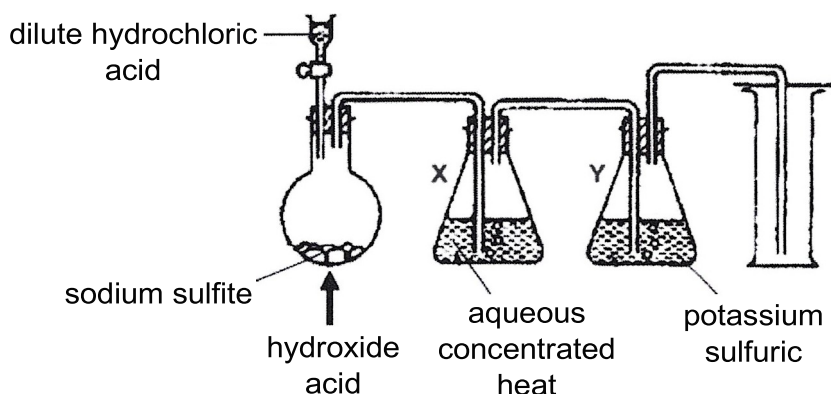
Which of the following order can be used to collect a pure dry sample of gas **X**?

- A** 1, 2, 3, 4
  - B** 1, 3, 2, 4
  - C** 1, 2, 3, 5
  - D** 1, 3, 2, 5
- 2 Crystals of lithium sulfate were prepared by the following method:
- 1 25.0 cm<sup>3</sup> of dilute sulfuric acid was accurately measured into a conical flask
  - 2 Aqueous lithium hydroxide was added dropwise into the conical flask until a colour change was observed. 28.0 cm<sup>3</sup> of lithium hydroxide was added.
  - 3 The mixture was heated to form a saturated solution, left to cool and the crystals collected were washed with approximately 5 cm<sup>3</sup> of distilled water.

Which row shows the pieces of apparatus used to measure the following?

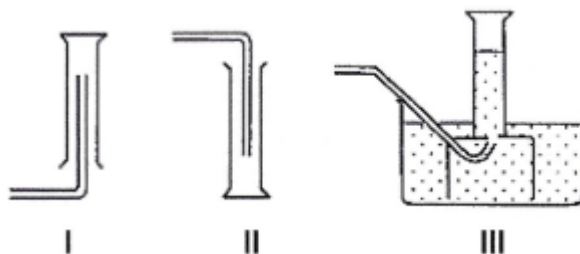
	<b>dilute sulfuric acid</b>	<b>lithium hydroxide</b>	<b>distilled water</b>
<b>A</b>	burette	pipette	measuring cylinder
<b>B</b>	measuring cylinder	burette	pipette
<b>C</b>	pipette	burette	measuring cylinder
<b>D</b>	pipette	measuring cylinder	burette

- 3 When dilute hydrochloric acid reacts with sodium sulfite, sulfur dioxide gas is produced. The set-up below represents an unsuccessful attempt to collect sulfur dioxide gas.



Which of the following modifications would make the experiment successful?

- A removing flask X
  - B removing flask Y
  - C replace concentrated sulfuric acid in flask Y with water
  - D using upward delivery method to collect the gas
- 4 Oxygen gas is insoluble in water. Which of the gas collection methods shown below is/are suitable for collecting oxygen gas?



	<b>I</b>	<b>II</b>	<b>III</b>
<b>A</b>	X	✓	✓
<b>B</b>	✓	X	✓
<b>C</b>	X	✓	X
<b>D</b>	✓	X	X

- 5 Magnesium reacts with sulfuric acid to produce a gas.

A student conducted experiments to determine how the volume of gas collected changed when the concentration of acid was varied. In each of the experiments, excess magnesium was added to 150 cm<sup>3</sup> of sulfuric acid in a conical flask.

Which pieces of apparatus would be most suitable to conduct the experiments?

- A gas syringe, pipette
  - B gas syringe, measuring cylinder
  - C beaker, mass balance
  - D beaker, gas syringe
- 6 In a volumetric experiment involving the addition of dilute hydrochloric acid to 25.0 cm<sup>3</sup> of aqueous sodium hydroxide, it is necessary to determine when the reaction has just completed.

Which piece of apparatus could be used to determine the end-point of the reaction?

- A electronic balance
  - B gas syringe
  - C stop watch
  - D thermometer
- 7 The reaction scheme shows how hydrated copper(II) sulfate, CuSO<sub>4</sub>.5H<sub>2</sub>O, changes when heated.

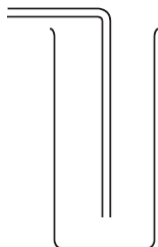


A little water was accidentally spilled into a dish containing hydrated copper(II) sulfate. What could be done to remove the water, leaving pure, dry CuSO<sub>4</sub>.5H<sub>2</sub>O?

- A Heat the dish over a boiling water-bath.
  - B Heat the dish to a constant mass.
  - C Heat the dish with a Bunsen burner.
  - D Let the dish stand in direct sunlight.
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- 8 An experiment is carried out to investigate the rate of reaction when calcium carbonate reacts with hydrochloric acid.

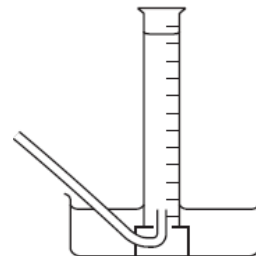
The volume of carbon dioxide gas given off is measured at different intervals of time. The diagram shows pieces of apparatus used to collect gases.



1  
downward delivery



2  
calibrated gas syringe



3  
displacement of water  
with a graduated tube

Which apparatus is suitable to collect and measure the volume of the carbon dioxide?

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

**EXPERIMENTAL TECH STRUCTURED QUESTIONS**

**Paper 1**

1 Part of a Chemist's notes on an experiment is shown in Fig. 2.

*Fig. 2*

(a) The blue-grey solid formed is copper(I) sulfide.

(i) Write down the formula of copper(I) sulfide

.....[1]

(ii) Justify, using information given in Fig. 2, why the blue-grey solid formed is a compound.

.....  
..... [1]

(b) Describe how pure, dry sulfur can be obtained after xylene was added to dissolve all the sulfur found in the reacting mixture.

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.....  
.....  
.....  
.....[3]

[Total: 5 marks]

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