

# Chemical Analysis

## Multiple Choice Questions

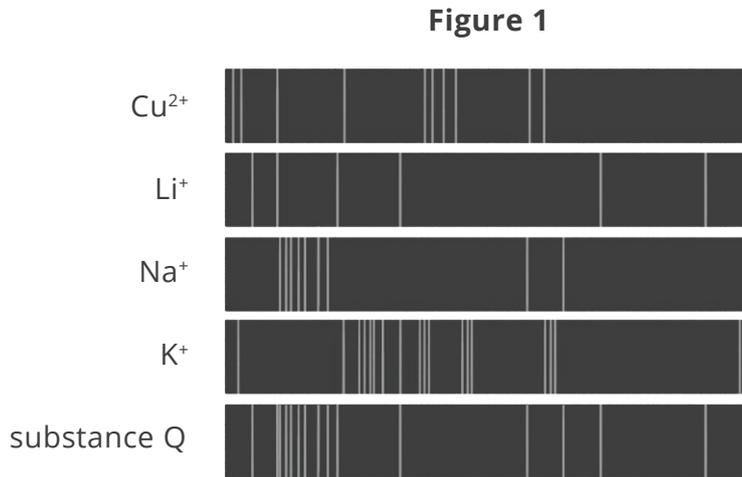
### Set 4 (Chemistry Only)

You may use a periodic table to help you answer these questions.

Tick **one** box.

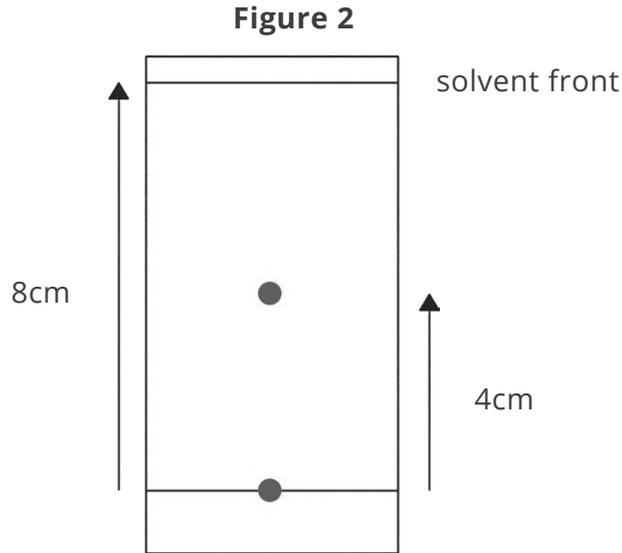
- Which of these is **not** an advantage of using instrumental methods to identify substances?
  - they are accurate
  - they are cheap
  - they are rapid
  - they are sensitive

**Figure 1** shows the flame emission spectra of substance Q and some common ions.



- Which ions does substance Q contain?
  - $\text{Cu}^{2+}$  and  $\text{Na}^+$  ions
  - $\text{K}^+$  ions only
  - $\text{K}^+$  and  $\text{Li}^+$  ions
  - $\text{Na}^+$  and  $\text{Li}^+$  ions
- A student placed a glowing splint at the opening of a test tube containing an unknown gas. The glowing splint relit. Which gas did the test tube contain?
  - hydrogen
  - oxygen
  - carbon dioxide
  - chlorine

**Figure 2** shows a chromatogram of a sample of red ink.



4. What is the  $R_f$  value for the red ink in **Figure 2**?

- A. 0.5
- B. 2
- C. 12
- D. 32

5. A dairy farmer sells the milk from their cows without adding anything to it. The bottle describes the milk as 'pure'. Can the milk accurately be described as pure?

- A. No, because the milk contains only one element.
- B. No, because milk is never pure.
- C. Yes, because, in everyday language, pure means nothing has been added to the milk.
- D. Yes, because the milk contains only one compound.

6. What is a formulation?

- A. a mixture that has been designed as a useful product
- B. an equation to calculate the amount of a component in a mixture
- C. any mixture
- D. a pure substance



A student carried out the chemical tests for some common anions on four unknown white compounds labelled A, B, C and D. Their observations are recorded in **Table 1**.

**Table 1**

Compound	Anion Test		
	dilute acid	barium chloride solution and dilute hydrochloric acid	silver nitrate solution and dilute nitric acid
A	no change	formed a white precipitate	no change
B	no change	no change	formed a white precipitate
C	produced a gas which turned limewater cloudy	no change	no change
D	no change	no change	formed a yellow precipitate

7. Which substance could be potassium sulfate,  $K_2SO_4$ ?

- A. A
- B. B
- C. C
- D. D

8. Which substance could be calcium carbonate,  $CaCO_3$ ?

- A. A
- B. B
- C. C
- D. D

9. Which substance contains chloride ions?

- A. A
- B. B
- C. C
- D. D

10. Which colour flame test would indicate that the compound containing chloride ions was likely to be potassium chloride?

- A. crimson
- B. green
- C. lilac
- D. yellow