# GCSE Chemistry B (Twenty First Century Science)

**J258/01** Breadth in Chemistry (Foundation Tier)

## Question Set 32

Multiple Choice Questions

**1** Amir has a sample of a salt, **Salt A**, that is used as a fertiliser.

He does some tests to find out which elements are in the salt.

**(a) (i)** Amir finds that **Salt A** contains positive potassium ions.

Which colour flame does Amir see when he does a flame test?

Put a (ring) around the correct answer.

**green** **lilac** **red** **yellow**

**[1]**

**(ii)** Potassium is an element. It is an essential nutrient for plants.

Name **one** other element that is an essential nutrient for plants.

**[1]**

**(b)** Amir thinks **Salt A** is potassium sulfate.

Potassium sulfate contains $K^+$ ions and $SO_4^{2-}$ ions.

What is the chemical formula of potassium sulfate?

**[1]**

**(c)** Amir tests **Salt A** to check it is potassium sulfate.

He dissolves some of **Salt A** in water and adds barium chloride solution.

Barium sulfate is formed.

**(i)** Describe the **colour** and **state** of the barium sulfate formed.

**[1]**

**(ii)** Complete the word equation for the reaction.

potassium sulfate + barium chloride → barium sulfate +.....

**[1]**

**(d)** Amir tests another unknown salt, **Salt B**, by looking at its emission spectrum.

Some emission spectra are shown in **Fig. 1.1**:

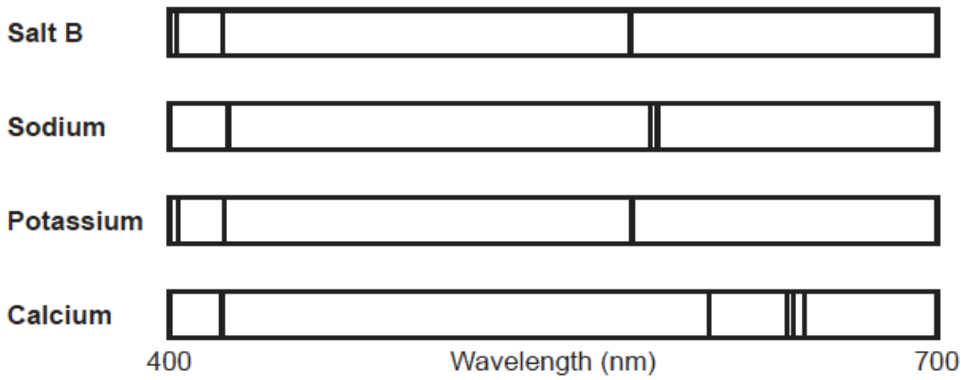


**Fig 1.1**

**(i)** Using **Fig. 1.1**, name the metal ion in **Salt B**.

**[1]**

**(ii)** Convert 400 nm to metres.

Give your answer in **standard form**.

1 nm = $1 \times 10^{-9}$ m

400 nm = ..... m **[1]**

**(e)** Elements can be identified using flame tests or by comparing emission spectra.

Amir uses the internet to compare each method:

| | **Flame test** | **Emission spectra** |
|---|---|---|
| **Equipment cost** | £10.15 | £11 500 |
| **Sensitivity** | Low | High |
| **Speed** | High | High |
| **Accuracy** | Low | High |

Amir is given 0.01 g of a compound to analyse.

Amir decides to use a flame test rather than comparing emission spectra.

Give **one** advantage and **one** disadvantage of using a flame test rather than comparing emission spectra.

**[2]**

## Total Marks for Question Set 32: 9

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