

3 A student tests two solids: solid **J** and solid **K**.

**Tests on solid J**

Solid **J** is iron(II) iodide.

The student dissolves solid **J** in water to form solution **J**. Solution **J** is divided into four portions.

(a) To the first portion of solution **J**, the student adds aqueous sodium hydroxide dropwise and then in excess.

observations when added dropwise .....

observations when added in excess .....

[2]

(b) To the second portion of solution **J**, the student adds 1 cm<sup>3</sup> of dilute nitric acid followed by a few drops of aqueous barium nitrate.

observations .....

..... [1]

(c) To the third portion of solution **J**, the student adds 1 cm<sup>3</sup> of dilute nitric acid followed by a few drops of aqueous silver nitrate.

observations .....

..... [1]

(d) To the fourth portion of solution **J**, the student adds 1 cm<sup>3</sup> of aqueous chlorine.

observations .....

..... [1]

## Tests on solid K

Table 3.1 shows the tests and the student's observations for solid K.

**Table 3.1**

| tests  | observations  |
|--|---|
| <b>test 1</b><br>Carry out a flame test on solid K.  | lilac coloured flame                                      |
| <b>test 2</b><br>The remaining solid K is dissolved in water to form solution K. Solution K is divided into two portions.<br><br>To the first portion of solution K in a boiling tube, add 1 cm <sup>3</sup> aqueous sodium hydroxide. Warm the product and hold damp red litmus paper at the mouth of the boiling tube. | the damp red litmus paper remains red                     |
| <b>test 3</b><br>To the second portion of solution K in a boiling tube, add about 1 cm <sup>3</sup> of aqueous sodium hydroxide and a piece of aluminium foil. Warm the mixture and test any gas given off.  | effervescence is seen<br>damp red litmus paper turns blue |

(e) State the conclusion about solid K that can be made from the observations in **test 2**.

..... [1]

(f) Identify the gas given off in **test 3**.

..... [1]

(g) Identify solid K.

.....  
..... [2]

[Total: 9]