3 A student tests two solids: solid **F** and solid **G**.

Tests on solid F

Solid **F** is calcium carbonate.

(a) The student adds about 15 cm^3 of dilute hydrochloric acid to the sample of solid **F** in a boiling tube and tests any gas produced.

observations .....

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..... [2]

(b) The student filters the product from **(a)** to obtain solution **H** as the filtrate.
The student divides solution **H** into three approximately equal portions in three test-tubes.

(i) To the first portion of solution **H**, the student adds about 1 cm depth of dilute nitric acid followed by a few drops of aqueous barium nitrate.

observations .....

..... [1]

(ii) To the second portion of solution **H**, the student adds aqueous sodium hydroxide dropwise and then in excess.

observations when added dropwise .....

observations in excess .....
[2]

(iii) To the third portion of solution **H**, the student adds about 1 cm depth of dilute nitric acid followed by a few drops of aqueous silver nitrate.

observations .....

..... [1]

Tests on solid G

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

Table 3.1

tests	observations
test 1 Do a flame test on solid **G**.	lilac coloured flame
test 2 Dissolve the remaining solid **G** in water to form solution **G**. Divide solution **G** into three portions. To the first portion of solution **G**, add about 1 cm^3 of aqueous chlorine.	orange solution forms
test 3 To the second portion of solution **G**, add about 1 cm^3 of aqueous sodium hydroxide.	remains colourless
test 4 To the third portion of solution **G**, add about 1 cm^3 of dilute nitric acid followed by a few drops of aqueous silver nitrate.	cream precipitate forms

(c) Identify solid **G**.

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..... [2]

[Total: 8]