3 A student tests two solids: solid **L** and solid **M**.

Tests on solid L

Solid **L** is hydrated aluminium chloride.

The student dissolves solid **L** in distilled water to form solution **L**. Solution **L** is divided into four approximately equal portions.

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

observations when added dropwise .....

observations in excess .....
[2]

(b) To the second portion of solution **L**, the student adds aqueous ammonia dropwise and then in excess.

observations when added dropwise .....

observations in excess .....
[2]

(c) To the third portion of solution **L**, the student adds about 1 cm^3 of dilute nitric acid followed by a few drops of aqueous silver nitrate.

observations .....

..... [1]

(d) To the fourth portion of solution **L**, the student adds about 1 cm^3 of dilute nitric acid followed by a few drops of aqueous barium nitrate.

observations .....

..... [1]

Tests on solid M

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

Table 3.1

tests	observations
test 1 Do a flame test on solid **M**.	light green coloured flame
test 2 Dissolve the remaining solid **M** in water to form solution **M**. Divide solution **M** into three portions. To the first portion of solution **M**, add about 1 cm^3 of aqueous sodium hydroxide.	no visible change
test 3 To the second portion of solution **M**, add about 1 cm^3 of aqueous sodium hydroxide and a piece of aluminium foil. Warm the mixture and test any gas given off.	effervescence is seen; damp red litmus paper turns blue
test 4 To the third portion of solution **M**, add about 1 cm^3 of dilute sulfuric acid.	white precipitate forms

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

..... [1]

(f) Identify solid **M**.

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..... [2]

[Total: 9]