3 A student tests two substances: solution **A** and solid **B**.

Tests on solution A

Solution **A** is aqueous iron(III) nitrate.

Record the expected observations.

The student divides solution **A** into three approximately equal portions.

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

observations when added dropwise .....

observations in excess .....
[2]

(b) (i) To the second portion of solution **A**, the student adds excess aqueous sodium hydroxide.

observations .....

..... [1]

(ii) To the product from **(b)(i)**, the student adds a small piece of aluminium foil. The student gently warms the mixture formed and tests any gas produced.

observations .....

..... [1]

(iii) Identify the gas produced in **(b)(ii)**.

..... [1]

(c) To the third portion of solution **A**, 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 B

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

Table 3.1

tests	observations
test 1 Do a flame test on solid **B**.	light green flame colour
test 2 Add the remaining solid **B** to dilute hydrochloric acid. Test any gas produced.	effervescence and a colourless solution forms limewater turns milky

(d) Identify the gas produced in **test 2**.

..... [1]

(e) Identify solid **B**.

.....

..... [2]

[Total: 9]