**1** Magnesium nitrate, $Mg(NO_3)_2$, and strontium nitrate, $Sr(NO_3)_2$, both decompose when heated to form the metal oxide and a mixture of gases.

**(a)** Write an equation for the thermal decomposition of $Mg(NO_3)_2$.

..... [1]

**(b)** State which of $Mg(NO_3)_2$ or $Sr(NO_3)_2$ decomposes at a lower temperature.

Explain your answer.

compound that decomposes at a lower temperature .....

explanation .....

.....

.....

.....

.....

[2]

**(c)** Magnesium oxide, MgO, and strontium oxide, SrO, both react with dilute sulfuric acid.

MgO forms a soluble salt, **A**.

SrO forms an insoluble salt, **B**.

**(i)** Identify the products formed when MgO reacts with dilute sulfuric acid.

..... [1]

**(ii)** Explain why **A** is more soluble than **B**.

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..... [3]

[Total: 7]