

**Question 31** (6 marks)

- (a) A student collected a 250 mL sample of water from a local dam for analysis. The data collected are shown in the table.

Mass of filter paper	0.23 g
Mass of filter paper and solid	0.47 g
Mass of evaporating basin	43.53 g
Mass of basin and solid remaining	44.67 g

= 0.24 g.

- (i) The water was filtered and the filtrate evaporated to dryness. 2

Calculate the percentage of the total dissolved solids in the dam sample.

..... 0.25 L. contains 1.14 g ..... =  $\frac{1.14}{0.25} = 4.56\%$

.....  $\frac{0.0014}{0.25} = 0.00564$  .....

- (ii) It is suspected that the water in the dam has a high concentration of chloride ions. 2

Describe a chemical test that could be carried out on the water sample to determine the presence of chloride ions. Include an equation in your answer.

..... Use precipitation to find if chloride is present,  
..... through addition of  $\text{AgNO}_3$ .

.....  $\text{Cl}^- + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NO}_3^-$  .....

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Question 31 (continued)

- (b) Name an ion other than chloride that commonly pollutes waterways, and identify its source and the effect of its presence on water quality. 2

Sulfate ions, present from car combustion emissions and volcano excrements. Sulfate causes the water to become acidic and inhospitable to organisms that rely on it, and to a minor extent leads to eutrophication and defoliation.

**End of Question 31**