

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

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

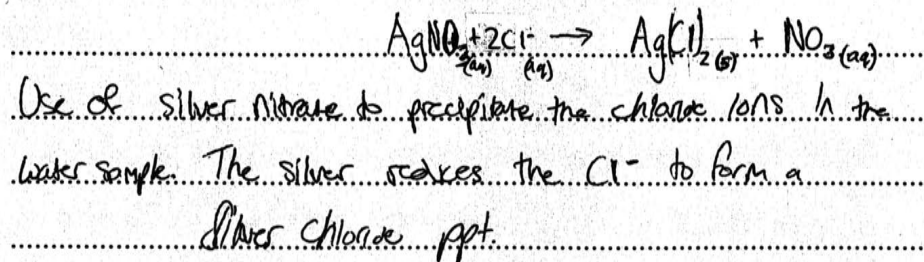
Calculate the percentage of the total dissolved solids in the dam sample.

$$44.67 - 43.53 = 1.14$$

$$\frac{1.14}{0.25} \times 100 = 456\% \text{ of Total dissolved solids}$$

- (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.



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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

name: Pb^{2+} Source: - low Pb water eroding water pipes containing lead
- buying battery casings and waste oil
- combustion of leaded fuel

effects: Increased amount of heavy metals in the water, which will effect marine life and water quality. To remove Pb^{2+} , water can be passed through membrane filter, although for a whole waterway, this is inefficient.

End of Question 31