

**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

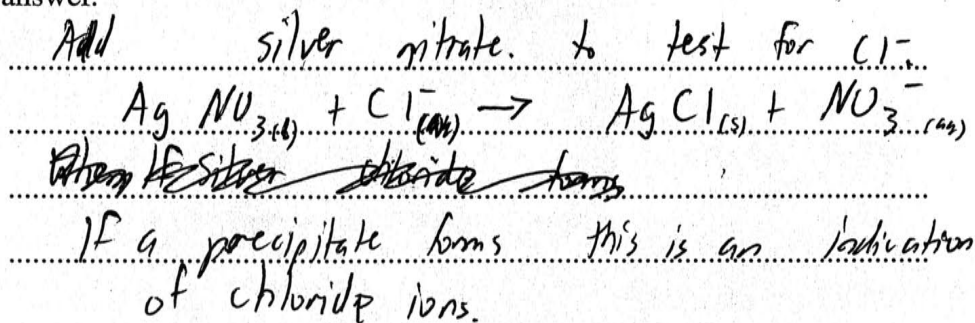
- (i) The water was filtered and the filtrate evaporated to dryness. 2

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

$$\begin{aligned} \text{mass of solid} &= 0.24 \text{ g} \\ \text{mass of remaining solid} &= 1.14 \text{ g} \\ \frac{0.24}{1.14} \times 100 &= 21\% \text{ TDS.} \end{aligned}$$

- (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.



Question 31 continues on page 24

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

Mercury ions are a heavy metal  
and they are toxic in water. They  
attack the brain and can cause  
heart disease. Mercury ~~can~~ comes from  
computer parts which use mercury in the circuits.  
These parts are frequently dumped in waterways.

End of Question 31