

1 (a) A solution is made by dissolving calcium chloride in water.

11.1 g of calcium chloride are dissolved in water.

The volume of the solution is made up to 500 cm³.

Calculate the concentration, in mol dm⁻³, of calcium chloride, CaCl₂, in this solution.

(relative atomic masses: Cl = 35.5, Ca = 40.0)

(3)

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concentration = mol dm⁻³

(b) The concentration of a solution of an alkali can be determined by titration with an acid.

25.0 cm³ portions of the solution of the alkali are transferred into a conical flask and titrated with the acid solution, using a suitable indicator.

(i) Describe how you would measure out and transfer 25.0 cm³ of the solution of the alkali.

(2)

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(ii) Complete the sentence by putting a cross (☒) in the box next to your answer.

The burette readings of acid added were

| | titration 1 | titration 2 | titration 3 |
|----------------------------------------|-------------|-------------|-------------|
| final volume / cm ³ | 27.20 | 30.10 | 25.35 |
| initial volume / cm ³ | 2.05 | 5.20 | 0.10 |
| volume of acid added / cm ³ | 25.15 | 24.90 | 25.25 |

The volume of acid added that should be used in the calculation is

(1)

- A** 24.90 cm³
- B** 25.00 cm³
- C** 25.10 cm³
- D** 25.20 cm³

