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 cm ³ .	
		Calculate the concentration, in mol dm ⁻³ , of calcium chloride, CaCl ₂ , in this solution.	
		(relative atomic masses: Cl = 35.5, Ca = 40.0)	(3)
		concentration =	mol dm
	(b)	The concentration of a solution of an alkali can be determined by titration with an acid.	
		25.0 cm ³ 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 cm ³ of the solution of the alkali.	
		the dikan.	(2)

(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 / cm³	27.20	30.10	25.35
initial volume / cm³	2.05	5.20	0.10
volume of acid added / cm³	25.15	24.90	25.25

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

(1)

- 25.00 cm³

	(Total for Question 1 = 12 ma	rks)
		(6)
	Describe tests that you should carry out on each sample to identify the type of water in each sample.	(-)
	You are provided with soap solution and the usual laboratory apparatus.	
	one is temporary hard water	
	one is permanent hard water	
	• one is soft water	
	You are provided with three unlabelled samples of water.	
	When mixed with a small volume of soap solution, hard water does not form a lather.	
*(c)	Some salts dissolved in water cause the water to be hard.	