## pH and Titrations – Exam-style questions

1. Suggest a pH value for each of the solutions in the table given the colour it will change universal indicator.

Substance	Colour in universal indicator	pH value
Lemon juice	Orange	
Bleach	Purple	
NaCl solution	Green	
Toilet cleaner	Red	

2. A 25cm^3 sample of sodium hydroxide was titrated against sulfuric acid of concentration 0.6mol.dm^3. Phenolphthalein was used as the indicator. The equation for the reaction is

$$2NaOH_{(aq)} \quad + \quad H_2SO_{4(aq)} \quad \rightarrow \quad Na_2SO_{4(aq)} \quad + \quad H_2O_{(l)}$$
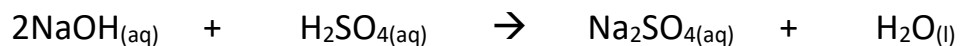
a. Name the piece of equipment used to measure out the sodium hydroxide.

b. What colour change should be seen at the end point of the titration?

c. The volume of sulfuric acid used in each titration is shown in the table below. Calculate the titre value for each titration and tick the concordant results and calculate your average titre.

Titration	1	2	3	4	5
Burette reading at end (cm³)	15.75	31.15	46.60	15.15	30.50
Burette reading at start (cm³)	0.00	15.75	31.15	0.00	15.15
Titre value (cm³)					
Concordant? ✓					

Average titre (cm³) =

d. Calculate the number of moles of sulfuric acid in your average titre

e. Calculate the number of moles of sodium hydroxide that reacted

f. Calculate the concentration of the sodium hydroxide solution