

# OCR (A) Chemistry GCSE

## PAG 6 - Titration

(Chemistry only)

Flashcards

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List the apparatus required to carry out a titration



List the apparatus required to carry out a titration

- Burette
- Conical flask
- Clamp stand
- Pipette
- Small funnel
- White tile/ piece of paper



What is the purpose of repeating a titration?



What is the purpose of repeating a titration?

To obtain concordant results, allow a mean titre to be calculated, reduce the effect of random error



# Why is a trial titre carried out?



## Why is a trial titre carried out?

To quickly check that the end-point can be reached with the concentrations and volumes being used. To find the rough volume required to reach end-point.



How do you read the volume using a burette?





How do you read the volume using a burette?

Read at eye level, use the bottom of the meniscus (the curve of the liquid), record volume to the nearest  $0.05\text{cm}^3$  if burette has  $0.10\text{cm}^3$  graduations.



# What is a neutralisation reaction?



# What is a neutralisation reaction?

Hydrogen ions reacting with hydroxide ions to form water



How can you measure pH (2 ways)?



How can you measure pH (2 ways)?

Use a pH probe

Use universal indicator and compare to the colour chart



# Describe how to set up a titration



## Describe how to set up a titration

Use a pipette to add a known volume of alkali to a conical flask. Add a few drops of indicator. Fill the burette with acid.



After the apparatus has been set up,  
describe how to carry out a titration





After the apparatus has been set up, describe how to carry out a titration

Open the tap of the burette to slowly add the solution to the conical flask, swirling to mix. Close the tap when the end point is reached. Record the volume. Repeat.



How do you know that the end point of a titration has been reached?



How do you know that the end point of a titration has been reached?

First permanent colour change of the solution in the conical flask.



# Describe the test for oxygen



# Describe the test for oxygen

A test tube of oxygen will relight a glowing splint



# Describe the test for hydrogen



## Describe the test for hydrogen

A lighted splint placed in a test tube of hydrogen will make a squeaky pop



# Describe the test for carbon dioxide





Describe the test for carbon dioxide

Forms a white precipitate with calcium carbonate or turns limewater from colourless to cloudy



# Describe the test for chlorine gas



Describe the test for chlorine

Damp blue litmus paper turns red then fades to white



# How would you carry out a flame test?



# How would you carry out a flame test?

- Clean a wire loop in HCl to remove unwanted ions
- Dip the wire loop into your sample
- Record the colour of the flame



What colour is the flame test for lithium ions?



What colour is the flame test for lithium ions?

Red



What colour is the flame test for sodium ions?





What colour is the flame test for sodium ions?

Yellow



What colour is the flame test for potassium ions?



What colour is the flame test for potassium ions?

Lilac



What colour is the flame test for calcium ions?



What colour is the flame test for calcium ions?

Orange-red



What colour is the flame test for copper ions?



What colour is the flame test for copper ions?

Blue-green



What colour is the precipitate when sodium hydroxide reacts with iron (II) ions?





What colour is the precipitate when sodium hydroxide reacts with iron (II) ions?

Green



What colour is the precipitate when sodium hydroxide reacts with iron (III) ions?



What colour is the precipitate when sodium hydroxide reacts with iron (III) ions?

Orange brown



What colour is the precipitate when sodium hydroxide reacts with copper (II) ions?



What colour is the precipitate when sodium hydroxide reacts with copper (II) ions?

Blue



What colour is the precipitate when sodium hydroxide reacts with calcium ions?



What colour is the precipitate when sodium hydroxide reacts with calcium ions?

White



What colour is the precipitate when sodium hydroxide reacts with zinc ions?





What colour is the precipitate when sodium hydroxide reacts with zinc ions?

White



How could you distinguish between  $\text{Zn}^{2+}$   
and  $\text{Ca}^{2+}$  ions?



How could you distinguish between  $\text{Zn}^{2+}$  and  $\text{Ca}^{2+}$  ions?

Add excess  $\text{NaOH}$ .

$\text{Ca}(\text{OH})_2$  precipitate doesn't change.

$\text{Zn}(\text{OH})_2$  precipitate dissolves to form a colourless solution.



# Describe the test for carbonate ions



Describe the test for carbonate ions

Add dilute acid. Pass gaseous product through limewater ( $\text{CO}_2$  turns limewater cloudy).



# Describe the test for sulfate ions



Describe the test for sulfate ions

Add a few drops of dilute hydrochloric acid then a few drops of dilute barium chloride solution.

White precipitate forms.

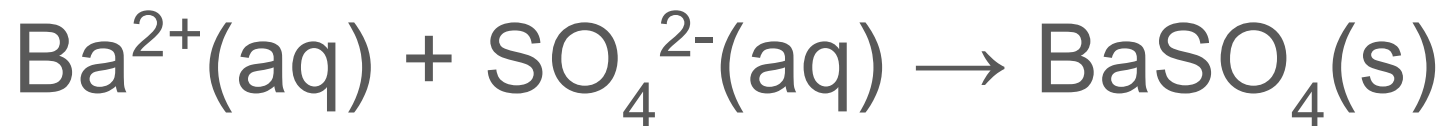


Write the ionic equation for the test for sulfate ions (higher only)





Write the ionic equation for the test for sulfate ions  
(higher only)



# Describe the test for halide ions



Describe the test for halide ions

Add nitric acid to react with carbonate ions so no  $\text{Ag}_2\text{CO}_3$  forms (white solid). Add silver nitrate. Precipitate forms:

White -  $\text{AgCl}$

Cream -  $\text{AgBr}$

Yellow -  $\text{AgI}$



How can you detect whether a substance is a strong acid or a strong alkali?



# How can you detect whether a substance is a strong acid or a strong alkali?

Add universal indicator

Red - strong acid

Yellow - weak acid

Blue/purple - strong alkali

Light blue - weak alkali

Green - neutral



What apparatus are use to record mass,  
time and temperature?



What apparatus are use to record mass, time and temperature?

Mass - balance

Time - stopwatch

Temperature - thermometer



Give 2 ways of measuring a volume of liquid and 1 way of measuring a volume of gas





Give 2 ways of measuring a volume of liquid and 1 way of measuring a volume of gas

Liquid - pipette or measuring cylinder

Gas - gas syringe or upside-down measuring cylinder

