

WJEC (Wales) Chemistry GCSE

2.2 - Acids, Bases and Salts Flashcards

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What is an acidic solution?



What is an acidic solution?

- A solution with pH less than 7
- The lower the pH, the stronger the acid



What is an alkaline solution?



What is an alkaline solution?

- A solution with pH more than 7
- The higher the pH, the stronger the alkali
- An alkali is a base dissolved in water



What is the pH of a neutral solution?



What is the pH of a neutral solution?

- pH 7



What ions do acids contain?



What ions do acids contain?

- Hydrogen ions, H^+



What ions do alkalis contain?



What ions do alkalis contain?

- Hydroxide ions, OH^-



What is a strong acid?



What is a strong acid?

- An acid which completely dissociates to release H^+ ions in an aqueous solution



What is a weak acid?



What is a weak acid?

- An acid which partially dissociates to release H^+ ions in an aqueous solution



What is a strong base?



What is a strong base?

- A base which completely dissociates to release OH^- ions in an aqueous solution



What is a weak base?



What is a weak base?

- A base which partially dissociates to release OH^- ions in an aqueous solution



What is the product formed when a metal is added to dilute acid?



What is the product formed when a metal is added to dilute acid?

- Acid + Metal \rightarrow Salt + Hydrogen
- Generally, the more reactive the metal in the reactivity series, the faster the reaction



What are the three neutralisation reactions of dilute acids?



What are the three neutralisation reactions of dilute acids?

- Acid + Alkali \rightarrow Salt + Water
- Acid + Base \rightarrow Salt + Water
- Acid + Metal carbonate \rightarrow Salt + Water + Carbon dioxide
- The composition of salt formed depends on the acid used and the positive ions in the base, alkali or carbonate



What is neutralisation?



What is neutralisation?

- The reaction of hydrogen ions, H^+ , with hydroxide ions, OH^- , to form water, H_2O



How can you test for the presence of carbonates?



How can you test for the presence of carbonates?

- Carbonates react with dilute acids to form carbon acid
- This gas formed from this reaction can be bubbled through limewater; if limewater turns cloudy, the gas is CO_2



How are crystals of soluble salts prepared?



How are crystals of soluble salts prepared?

- Measure a set volume of acid
- Heat the acid gently
- Add the chosen base in excess, the acid has been neutralised when excess solid sinks to the bottom
- Filter the excess base using filter paper and a funnel
- Heat the salt solution to evaporate the water
- Leave the rest to evaporate slowly so crystals of the salt form



How can soluble salts be prepared?



How can soluble salts be prepared?

- Soluble salts can be made from acids by reacting them with insoluble substances, such as metals, metal oxides, hydroxides or carbonates



What are the names of salts formed from hydrochloric acid, nitric acid and sulfuric acid?



What are the names of salts formed from hydrochloric acid, nitric acid and sulfuric acid?

- Hydrochloric acid produces chlorides
- Nitric acid produces nitrates
- Sulfuric acid produces sulfates



What is the test for sulfate ions?



What is the test for sulfate ions?

- First add dilute hydrochloric acid, followed by barium chloride solution
- A white precipitate will form if sulfate ions are present in the solution



What is titration used for?



What is titration used for?

- A method to prepare solutions of soluble salts
- To determine the relative and actual concentrations of solutions of acids/alkalis



How do you calculate the concentration of a solution?



How do you calculate the concentration of a solution?

- Concentration = mol \div volume
- The units of concentration are mol dm⁻³



What does the concentration of an acid/base refer to?



What does the concentration of an acid/base refer to?

- The amount of substance present - the number of moles of that acid/base in solution



What does the strength of an acid/base refer to?



What does the strength of an acid/base refer to?

- To the degree of ionisation of the acid or base - how readily the acid releases H^+ ions or how readily the base releases OH^- ions



How can insoluble salts be prepared?



How can insoluble salts be prepared?

- Insoluble salts can be formed in a precipitation reaction
- React 2 solutions which contain the ions of the desired salt
- A solid precipitate of your salt is produced
- Filter the salt out using a filter paper and funnel
- Wash the salt with distilled water and leave it to dry on the filter paper

