F4 C7(calculation concentration of acid and alkali)
Definition
Standard solution =solution which is concentration accurately known
Neutralisation=reaction between acid and base to produce only water and salt
Acid = substance that ionise in water to produce hydrogen ions
Base = substance react with an acid to produce only salt and water

Acid
-mineral acid
HCl ,H_2SO_4 ,HNO_3 ,H_2CO_3...
-Organic acid
HCOOH,CH_3COOH...

Basicity of acids
The basicity of an acid is the maximum number of hydrogen ions produced when an acid molecule ionises in an aqueous solution.
Monophonic acid=HCl ($H^+ + Cl^-$) ,HNO_3 ($H^+ + NO_3^-$) ,CH_3COOH($CH_3COO^- + H^+$)
Diprotic acid=H_2SO_4 ($2H^+ + SO_4^{2-}$) ,H_2CO_3($2H^+ + CO_3$ 2-)
Triprotic acid=H_3PO_4 ($3H^+ + PO_3$ 3-)

Uses of acid
Sulphuric acid (H_2SO_4) = chemical fertilizers ,detergent ,paints and polymers
Hydrochloric acid (HCl) = remove rust on steel ,cleaning agent(toilet cleanser)
Nitric acid (HNO_3) = manufacture chemical fertilizers
Ethanoic acid(Acetic acid) = make vinegar ,preservative for pickles
Ascobic acid = As vitamin C(increase body resistance to infection,prevent scurvy)
Tartaric acid = flavouring in food and drink ,make fruit or health salt
Benzoic acid = preservative in food(Sauces)

Chemical properties of acid
-sour
-pH<7
-react with metal to form hydrogen gas and salts($Mg + 2HCl \rightarrow MgCl_2 + H_2$)
-react with metallic carbonates to form carbon dioxide ,water and salt($2HCl + CaCO_3 \rightarrow CaCl_2 + CO_2 + H_2O$)
-react with metallic oxide and hydroxide to form only salt and water($HCl + NaOH \rightarrow NaCl + H_2O$)

-The smaller the pH value ,the more acidic the solution is ,the higher the concentration of hydrogen ions
-Strong acid ionise completely in aqueous solution to produce higher concentration of hydrogen ions./higher degree of dissociation分解程度很高(Exp :Nitrate ,Sulphate ,Hydrochloric)
-weak acid ionise partially in aqueous solution to produce lower concentration of hydrogen ions./ lower degree of dissociation.(Exp :Ethanoic acid)

Bases and alkalis
-most bases are metallic oxides or hydroxides
-base(insoluble in water)
-alkali(soluble in water)
*all alkalies are bases, but all bases are not alkalies.If base(CuO) do not dissolve in water ,it will not dissociated OH- ion.
-The presence of hydroxide ions causes alkaline properties
-The larger the pH value ,the more alkaline the solution is ,the higher the concentration of hydroxide ions
-Strong alkali is an alkali completely dissociated in water to produce a higher concentration of hydroxide ions./higher degree of dissociation (Exp :Sodium hydroxide)
-Weak alkali is an alkali partially dissociated in water to produce a lower concentration of hydroxide ions./lower degree of dissociation (Exp :Ammonia solution)

Indicator (pH paper ,litmus paper)

	Acid	Neutral	Alkaline

PH paper/universal indicator	Red	Green	Violet/blue
Phenolphthalein	Colourless	Colourless	Pink
Methyl orange	Red	Orange.	Yellow

Formula of concentration=MV/1000

Neutralisation Application:
-baking powder(NaOH ,alkali) treat read ant sting/bee sting(acidic sting)
-weak bases ,magnesium hydroxide/sodium hydrogen,H2Na treat gastric pain
-calcium hydroxide neutralised soil which is acidic
-toothpaste(contain magnesium hydroxide) neutralises the acids in our mouths