**Notes To Study For Chemistry Paper 6**

**Topics**

**-Salt Preperation**

**-Filteration, distillation, Dissolving,** **Chromotography.. fractional distaillation.. filtration.. precipitation**

**-Salt Analysis ( Cations and anion tests)**

**-Testing for Ions**

**http://www.absorblearning.com/chemistry/demo/units/LR1106.html**

**-Labelling of apparatus**

**-Rate of reaction.**

**-Graph drawing and explaining curves etc..**

**-Test for gasses**

**-Fermentation**

**-Basic knowledge of electrolysis (VERY BASIC)**

**Salt Preperation-**

**To Prepare Soluble Salts:**

**1- Add the acid in a beaker then add a solid (base/carbonate/metal)**

**2- Then solid is in excess so the salt is formed in a solution**

**3- Filter off the excess solid using a funnel**

**4- Put it in an evaporation dish, evaporate it to reduce the volume of the solution.**

**5- Transfer the hot liquid to a dish and crystals are formed after leaving it to cool and until the solution is saturated.**

**To Prepare insoluble salt:**

**1- Add a soluble salt solution (acid +(base/carbonate/metal)) with another soluble salt solution. An insoluble salt is formed as a solid**

**2- Filter it using a funnel to collect the salt.**

**3- The salt that stays on the filter paper is taken and is washed with a cold water and left to dry to form insoluble salt.**

**Salt Preperation- If it is Soluble or Insoluble**

**For soluble**

 **Use titration...ex:NaCl(use NaOH and HCl) place either one in a burette and the other in a beaker add universal indicator, then start adding drops of solution in burette until it goes green...note the volume used, repeat using same volumes but without indicator, then apply crystalisation OR evaporation**

**For Insoluble**

**Use precipitation or nuetralisation...( Use preciptation only when the cation is above Hydrogen in the reactivity series) ex: CuCl2 u cannot use precepitation cause Cu is below Hydrogen so u use nuetralisation where u react base (CuOH or CuCO3 or Cu(OH)2) with EXCESS HCl to from CuCl2 +water....u then filter and dry between two sheets**

**3)precpitaion is basically same procedure as nuetralisation, u just use a metal higher than hydrogen instead of the base...**

**There are two types of salts that can be prepared ... Insoluble and the other ones are soluble .**

**There are different methods such as ..**

**For preparing soluble salts - Titration method**

**1. Put 25cm cube of base eg NaOH soln into a flask using a pipette an then add 2 drops of phenolphthalein indicator which turns pink when added .**

**2. Add an acid eg HCl from a burette little at a time ( Mark the starting point ) .. And mix it carefully by swirling the flask which helps in mixing of acid and the base .**

**3. By adding the acid more dr by drop would result in to the solution getting colourless which means that all the acid is used up and the solution is neutral ( Mark the ending point ) . By this you can say that how much acid is needed to neutralise 25cm cube of base .**

**4. Then , again .. Carry out this reaction WITHOUT the indicator ( this is because the indicator would make the salt impure ) . Put 25 cm cube of base into a flask and burette the same amount of acid into it .**

**5. Then .. Heat the solution from the flask and evaporate the water .. You'll notice that White crystals of NaCl will be left behind !**

**Making insoluble salts with metals which depends upon the metals like eg mg al zn and fe can react properly with the acid .. Na K and Ca won't react bcz they are too violent .. Lead reacts slowly whereas cu ag au do not react with the acid !**

**In this reaction let's use dilute h2so4 as an acid and zn in solid form to form znso4 as an soluble salt .**

**1. Add zn to the acid in a beaker . As it starts to dissolve in the acid .. It releases hydrogen bubbles . This bubbling stops when the acid is used up .**

**2. Some zinc is still left as the metal was in excess .. So .. Remove it by filtering which leaves an aqueous solution of zinc sulphate .**

**3. Heat the solution to evaporate some of the water and then leave it to get cool .. The crystals on znso4 soon start to form !**

**Preparation of Soluble salts from insoluble base and an acid ( neutralisation )**

**Copper will not react with dilute h2so4 .. So to make a copper salt , you must start with a base like copper(2)oxide which is insoluble and .. Blue cuso4 forms with h2o .**

**1. Add copper(2)oxide to dilute h2so4 . It dissolves on heating and turn the solution to blue . Keep it excess until no more of it is dissolved .. Which will mean that no more acid is left to be used up !**

**2. Remove the excess solid by filtering which leaves up a blue solution of copper(2)sulphate in aqueous state .**

**3. Heat the solution to evaporate some of the water .. And then leave it to be get cooled . blue crystals of copper (2) sulphate start to form !**

**Preparation of insoluble salts .**

**Theres only one way given in our syllabus to prepare them . Which is by precipitation .**

**Eg barium sulphate is an insoluble salt which can be prepared by adding barium chloride and magnesium sulphate .**

**1. Make up solutions of barium chloride and magnesium sulphate .**

**2. Mix them . A White precipitate of barium sulphate forms at once .**

**3. Filter the mixture .the precipitate is trapped in the filter paper .**

**4. Rinse the precipitate by running distiller water through it .**

**5. Then place it in a warm oven to dry .**

**Keep in mind that - to precipitate an insoluble salt , you must mix a solution that contains it's positive ions with the one that contains it's negative ions**

**Like in this experiment ..**

**BaCl2 - Ba2+ and Cl-**

**MgSO4 - Mg2+ and SO4 2-**

**Summary of above notes**

**For soluble salt, you may use a solid base (or metal) and an acid, OR a soluble base (alkali) and an acid..**

**For an insoluble salt, you use the titration method.**

**So therefore, we have three types of experiments we need to learn:**

**1) Solid base (or metal) and an acid to make a SOLUBLE salt.**

**2) Soluble base (alkali) and an acid to make a SOLUBLE salt.**

**3) Precipitation method to make an INSOLUBLE salt.**

**Here are the steps you need to learn for each experiment, and you should be able to recognize from the reactants they give you which method you need to talk about, because if you misread the question, and write another method, all your answer will be wrong...**

**1) - Add excess metal (metal oxide or metal carbonate.. Etc) (for example zinc) to acid (for example sulpharic acid) in which zinc sulphate and hydrogen gas will be formed. Excess solid settles down.**

**- As the gas (hydrogen) escapes, filter the mixture to remove the excess solid.**

**- Collect the filtrate ( aqueous zinc sulphate solution).**

**- Heat to evaporate water to collect salt.**

**2) - I will use sodium hydroxide as an example for alkali, and sulpharic acid as an example for acid.**

**- Transfer sulpharic acid from a biuret gradually into a flask containing an alkali (Sodium hydroxide) and universal indicator.**

**- as the colour of the solution changes, stop adding the acid in which neutralization has been reached. This method is called TITRATION!**

**- Repeat the experiment using same volumes of acid and alkali but without indicator.**

**- Heat the solution (sodium sulphate) to evaporate water and collect the salt.**

**3) - To precipitate an insoluble salt, you should mix a solution containing it's positive ion with another solution that contains it's negative ion.**

**- Add the correct solutions.**

**- Filture the mixture ( the residue will be the insoluble salt).**

**- Wash he residue to purify it.**

**- Leave the residue to dry then collect.**

**Last but not least, sometimes they ask you for crystals, so you writ the appropriate meod above followed by:**

**- Heat the solution till point of crystallization which can be figures by placing a glass rod in the beaker and observe the formation of the first crystals on it.**

**- leave the solution to cool gradually.**

**- Filter, dry and collect the crystals!**