Tips for Chemistry ATP (both IGCSE and O-level):

Some precautions:

=> Experiments involving poisonous gases like Nitrogen DIOXIDE, Ammonia and Bromine -> Carry out the exp. in Fume Cupboard or in a well Ventilated Room.

=> Experiments involving heat -> Use a polystyrene cup for insulation to prevent heat loss! + Always take the same initial readings for better accuracy;

=> Experiments involving Acids, Liquids or Solids -> Always use the same concentration; Same Volumes; Same Surface Area or Same Masses exceptions are some variables!

=> Experiment involving Crystallisation -> Allow to cool SLOWLY and Use more water and more salt for better results!

SOME COMMON and USEFUL precautions for all experiments (use these when your mind is BLANK)

=> Repetition of the exp.

=>Taking Average > Put your tie in shorts

=> Use Goggles

=> Taking measurements carefully and multiple measurements , to achieve accuracy ( by finding the average )

=> When drawing the best fit line in a graph , do not include points that seem to be out of the curve ,use a sharp and make the curve as smooth as possible , and remember to plot the independent Variable ( Temprature in a Time-of-reaction ( Y ) / Temprature ( X ) graph ) and NEVER forget to write the labels.

Tests

1.For Water:

> By adding anhydrous Copper(II) Sulphate , which will turn from white to blue.

> By adding anhydrous Cobalt(II) chloride , which will turn from blue to pink.

2.For unsaturated hydrocarbon ( Alkenes )

>Liquid : By adding Bromine water to it and shaking. (it'l go from Brown to colourless)

>Gas : By passing the compound through Bromine water. (Colour change = Brown to colourless)

3.For purity of substance

Solids => Test for melting point , if it is the correct value ( like the data says ) it is pure , if not, it is impure. e.g. Ice at 0 C°

Liquids => Test for boiling point , if it is the correct value ( like the data says ) it is pure , if not, it is impure. e.g. Water at 100 C°

COLLECTION TECHNIQUES:

=> upward delivery is for -> gases less dense than air (Hydrogen and Ammonia)

=> Downward delivery is for -> gases more dense than air (Carbon Dioxide

=> Displacement of water method -> insoluble gases ( Methane )

Fermentation:

=> Glucose and Yeast are used! (just rememeber that Yeat contains enzymes -> Biological Catalysts)

=> Suitable Temperature 37 degrees (Optimum for Enzyme)

=> Bung is used -> To Let Carbon Dioxide out, and prevent the entry of Oxygen.

=> Why is Oxygen's entry prevented (-> because it'l oxidize the alcohol to Carboxylic Acid and also it'l affect the anaerobic respiration)

=> Why does the reaction stop? -> Due to an excess in the conc. of alcohol, Yeast dies. Or Glucose finishes up!

Chromatography:

=> Draw a baseline with a pencil (pencil being insoluble) about 1-2 cm above the end of the chromatogram

=> Use a pipette to put a concentrated spot of dye on the paper

=> Dip it in a solvent (Water, if it's soluble in it otherwise an organic solvent e.g Ethanol)

=> the solvent level MUST be below the baseline

=> The solvent would start to rise up the paper producing a no. of spots (depending on the no. of dyes present in the substance)

=> Spray a locating agent for colourless dyes like amino acids or simple sugars

=> Or identify with RF value (formula = (distance moved by the dye)/(distance moved by the solvent)

Oxidising Agents!

=> KMn04 (V11) -> FROM PURPLE TO COLOURLESS!

=> K2Cr2O7 (VI) -> From Orange to Green!

=> All metals are reducing agents! (Mention the Group I metals, when asked)

=> Dehydrating Agents : Sulfuring Acid

=> Drying agent : Calcium Oxide

Ethene test: Add bromine water and bromine water will go colourless with alkenes (ethene) and it will remain orange for alkanes (ethane)

For precautions .. Tie your hair at the back .. Wear gloves .. Lab suit !

Universal Indicators:

Acid ( Red - Yellow) , Neutral ( Green) , Alkaline ( Blue - Violet)

Phenolphthalein: Alkaline ( Pink) For Strong ( Colourless) , Neutral ( Colourless) , Acid ( Orange)

Methyl Orange: Alkaline: ( Yellow) , Neutral ( Colourless) , Acid ( Red)

Bromothymol Blue: Acid (Yellow) , Neutral (Dark green) , Alkaline (Blue)