Chemistry Learning Points

Grass

August 2022

1. ***The Air is made of Air:*** Read the question carefully!
2. Displacement: **Ions** are displaced! Not elements or compounds.
   (So say like I^- is displaced, not I_2)
3. Safer to just quote the data if given; i.e. As the bond length decreases from *0.092 to 0.16nm*, the bond energy increases from *614 kJ/mol to 299 kJ/mol*
4. Mention the **specfic** reactants involved for the energy released in bond forming and energy absorbed in bond breaking.
   (As well as the no. of moles for each reactant and product involved in the reaction if given.)
5. Aqueous Bromine, $Br_{2_{(aq)}}$, is reddish-brown. While aqueous iodine, $I_{2_{(aq)}}$, is brown.
6. Why does metal Γ remain shiny after being exposed to Σ substance?
   (Esp. for *Al* and stainless steel / *Cr*)
   A layer of unreactive Γ oxide costs the Γ metal, protecting it from corrosion / reacting with Σ substance.
7. Rmb that observation is what what you can see, smell, etc.
   So like write *"colorless, odorless gas would be evolved"* instead of *"oygen gas is evolved"*
8. Noble gases naturally exists with *stable electronic structure*, where their *valence shell is completely filled*. Thus they are *unreactive*. Hence, they **will not be involved in chemical bonding.**
9. Why is CO_2 not a gas harmful to human health?
   Carbon dioxide is a relatively harmless gas, which is also produced naturally by the human body during respiration.
10. Why is a black smoke seen after burning hydrocarbons?
    It is the carbon soot formed by the **incomplete** combustion of the hydrocarbons.
11. Checking for presence of salts in an aqueous solution:
    Carry out evaporation to dryness. If dissolved salts are present, a residue / solid will be left behind.
    (But if the qns ask for checking the purity of the aqueous solution, then can just use the normal method of seeing if it boils over a range of temperatures / only begin boiling at a higher temperature than expected)
12. The catalyst for the decomposition of hydrogen peroxide (H_2O_2) is maganese (IV) oxide
13. Acidified potassium dichromate (Oxidising Agent): Changes from orange to green (Test for reducing agent)
14.

Oxidising Agents	Reducing Agents
Bromine Br_2	Carbon C
Chlorine Cl_2	Carbon Monoxide CO
Concentrated Sulfuric Acid H_2SO_4	Hydrogen H_2
Nitric Acid NO	Hydrogen Sulfide H_2S
Oxygen O_2	Metals
Potassium Maganate (VII) $KMnO_4$	Potassium Iodide KI
Potassium Dichromate (VI) $K_2Cr_2O_7$	Sulfur Dioxide SO_2

15.

Compound	Chemical formula	Colour
Chromium (III) Chloride	$CrCl_3$	Green
Iron (II) Sulfate	$FeSO_4$	Pale Green
Magnanese (IV) Oxide	MnO_2	Black
Copper (I) oxide	Cu_2O	Red
Iron (III) Chloride	$FeCl_3$	Yellow
Potassium Maganate (VII)	$KMnO_4$	Purple
Copper (II) Oxide	CuO	Black