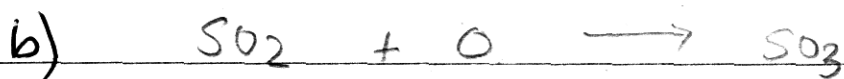




(28)

(a) (i) Saponification, is the process of making soap by adding fats (lipids) to an Alkanoic acid (i.e. Carboxylic acid).

(ii) Soap molecules are such that they have a negative ion 'head' which is hydrophilic (loves water), its tail is hydrophobic (hates water). This gives it the special property that it ~~offers~~ joins to the oil/dirt by its tail, and is removed by the attraction to the water.



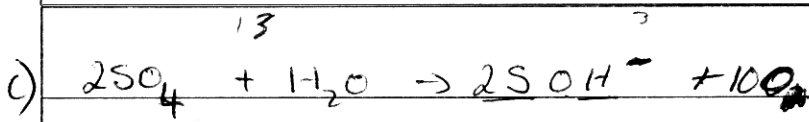
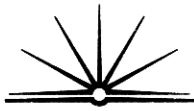
$$0.06 \text{ mol L}^{-1} \quad 0.05 \text{ mol L}^{-1} \quad 0.04 \text{ mol L}^{-1}$$

$$K = \frac{[\text{W}]^c [\text{Z}]^d}{[\text{X}]^a [\text{Y}]^b} \quad a\text{X} + b\text{Y} \longrightarrow c\text{W} + d\text{Z}$$

$$K = \frac{[\text{SO}_3]^1}{[\text{SO}_2][\text{O}]}$$

$$K = \frac{[0.04]}{[0.05][0.06]}$$

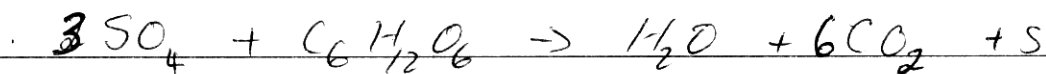
$$K = 13.3$$



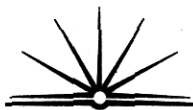
Sulfuric acid starts to spit when added water is added so it has to be done ~~with~~ SO_4 added to water. It gives off heat.

ii) Sulfuric acid is used as an oxidizing agent in the industries to make fertilizer.

Sulfuric acid dehydrates glucose $\text{C}_6\text{H}_{12}\text{O}_6$



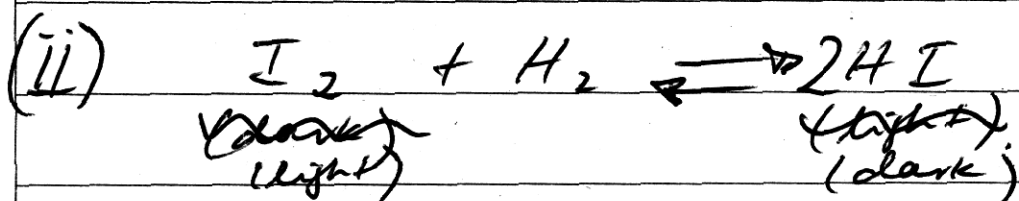
Sulfuric acid can be used to identify some sulfates like Barium Sulfate by producing white precipitate.



d) (i) I aimed to determine the equilibrium position when pressure is added to a system.

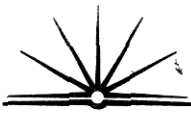
Procedure

- Filled a syringe with iodine (brown) solution
- applied pressure to the system by squeezing the syringe.
- observed colour change. As ~~pressure~~ we squeezed or applied pressure to the syringe, it went a darker brown colour. Within seconds, it had ~~the~~ gone a fainter brown.



As the equilibrium's pressure increased, the equilibrium moved to the side with fewer gaseous molecules \therefore lightening the solution.

We determined the equilibrium reaction by observing the colour changes of the iodine solution in order to conclude that, an increase in



pressure of a system, forces the equilibrium to the side of fewer gaseous molecules.

By looking at the equation and comparing the gaseous molecules, we were able to determine which side the equilibrium would proceed to in order to counteract the change.



- e Use of a number of methods.
- Use of electrolysis NaOH , is usually found with other compounds, hence the need to go through and separate it.
- Filters of mercury once used, but did not give most purified result \rightarrow also poisonous method when system emptied
 - ^{Filter} ~~Abesdoes~~ \rightarrow poisonous - did give good results
 - Use of membrane \Rightarrow good results ~~did not~~ allow great quantities of product to go through, leaving behind reactant. Pores adjusted so only product passed through, ~~no~~ method best not must effect on environment, \rightarrow no use of poisonous products only a layer of polymer.
- \Rightarrow During process ammonia is used, is constantly recycled, and used in process.