

4- The text :-

Acids are compounds that yield hydrogen ions or protons in solution. The general properties of acids are sour taste, effect on colors of indicators, reaction with metaloxides and hydroxides (neutralization) , reaction with metals to yield hydrogen gas, reaction with carbonates and bicarbonates to produce carbon dioxide gas, effect on clothing , and effect on tissues. Bases are compounds yielding hydroxide (OH^-) ions in solution. Bases are also compounds that accept proton. Bases have a slippery, soapy feeling, they affect the colors of indicator , neutralize acids, react with certain metals to produce hydrogen , and affect tissus and clothing.

Titration is a method for determining the strength of an unknown a cid (or base) by using a buret containing a base (or a cid) and an indicator. *

The ion product of water , $K_w = [\text{H}^+] [\text{OH}^-] = 10^{-14}$ the PH of a solution indicates numerically the acid (or base) strength of a solution in terms of its hydrogen ion concentration .

APH of 7 indicates a neutral solution.

a PH below 7 , an acid solution , a PH above 7 , a basic solution.

Buffer solution:- are solution which resist chanes is their PH when . small a mount of acids or bases are added to them. Buffer

solution help maintain the proper PH of the body fluids. Buffer solution (weak acid and its salt or weak base and its salt)

Example :- calculate the PH and POH of a solution in which the hydronium ion concentration is $2.0 \times 10^{-3} \text{M}$.

Example :- calculate PH of the buffer solution containing benzoic acid 0.5M and Na- benzoate at a concentration. 10g/L
 $\text{pka} = 4.1$

Oxidation – Reduction:-

Oxidation:- losing of electron by an atom attended by an increase in its oxidation number.

Reduction:- the gaining of electrons by an atom attended by a decrease in its oxidation number.

In an galvanic cell the electrode at which reduction occurs in electrolysis is called cathode and the one at which oxidation occurs is called the anode .

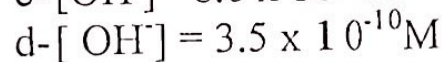
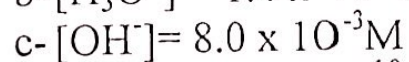
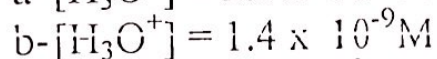
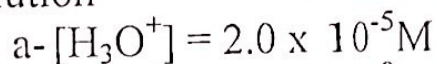
The Nernst equation:-

$$E - E^{\circ} = \frac{0.059}{n} \times \log \frac{[c]^c [D]^d}{[A]^a [B]^b}$$

Exp:- what is the potential for the half cell consisting of a cadmium electrode immersed in a solution that is 0.0100F cd^{2+} ?

5/ post test :-

Q1 / indicate whether the following acidic , basic or neutral solution



Q2/ List the general properties of acids and bases.