	Se
	Acids and Bases
	TICIOS WICE DUNG
1, 2, -4	The Bronsted - Lowry definition is:  • an acid is a proton (H+) donor  • a base is a proton acceptor.
	· a long is a ponton acceptor.
	a asc of c processing the second of the seco
_	Conjugate acid-base pairs always differ by one proton (H+)
	Amphiprotic refers to the Bronsted-Lowry definitation of acids and base and indicates a species that can denate (acting as acid) or accept (acting as a base) a
	donate (acting as acrol) or accept (acting as a bec)
	NH3+ H20 = NH4+ + GH HCO3
	Gacid
	,
	CH3COOM + H2O = CH3COO + H3O+
	4) base
-	Amphateric is a more general term and refers to a substance that can act as a acid and a base.  Al (OH)3(5) + 3Han -> Al (cog) + 3H2O(11)
	· · · · · · · · · · · · · · · · · · ·
	AL(OH)zk, + OHan - AL(OH)+ (aq)
-	lewis
	· a base is an electron pair acceptor
-	A coordinate (dative) covalent bond is always formed in a lewis acid-base reaction.

	For a substance to act as a lewis base, it must have
	a lone pair of electrons. For a substance to act as a lewis acid, it must have space to accept a pair of electrons in its outer shell.
	electrons in its outer shall
	The tos over smell.
-	metal + acid -> sall + hydrogen.
	Control of the Line of the Control o
	· Metals lover than hydrogen in the activity series will not react with acids.
	will not react with acids.
	acid + carbonate -> salt + water + carbon dioxide.
May Take	a dedalance hadrings him (acted in the
-	base + acid -> salt + water.
. 4 -	Alkalis are solutions obtained when a metal hydroxide dissolves in water or when certain bases react with water
\$ 1,16	dissolves in water or when certain bases react with water
	Neutralisation reactions are exothermic and produce a
	salt and water shonly.
	The pH scale can be used to indicate whether a solution is acidic, alkaline or neutral.
	is acidic, alkaline of neutral.
	PH is a measure of the concentration of H'ag) ions in a
	Solution: A restaura M has the region
	- pH is the negative log of to the base 10 of the hydrogen ion concentration in an aqueous solution.
-	hydroger ion concentration in an aqueous solution.
· ·	pH = -log [Han]
	[Htaq] = 10PH
	is to fellow the second of the second of
Med one	

	Kw = [H'aq] [OH'aq]
	Kw is called the ionic product constant for water  Kw has a value of 1.0x10" at 298 K.
	H solution is:  - newtral if [H'max] = [OH'max]  - acidic if [H'max] > [OH'max]  - base /alkaline if [OH'max] > [H'max]
	Strong acids such as hydrochloric (HCL), sulfuria (H2SO,) and nitric (HNOz) acid dissociated completely in aqueous solution
ore Marie	Monoprotic - dissociates to form one proton per molecule.  Diprotic - dissociates to form two protons per molecule.
p = (	Weak acids dissociates only partially in aqueous-
	Strong bases ionise completely in agreeous solutions. I -
- 11	Weak bases ionise only partially in aqueous solution.
3	The stronger an acid, the weaker its conjugate base.
- 11	The stronger the base, the weaker its conjugate acid.
-	Strong acids conduct better electricity than solutions of weak acids. Strong acids are described as strong electrolytes and weak acids are as weak electrolyte.

	(equal concentration of acide are boing compared)
-	pH is a measure of the concentration of Ht ions in solution-
	pH is a measure of the concentration of H <sup>t</sup> ions in solution- the lower the pH, the higher the concentration of H <sup>t</sup> ions.
9.	and therefore pact was a fill ill moth to
	Strong acids have a higher concentration for of free H ions and therefore react more rapidly with a metal to form hydrogen.
	J J
- fallow	The concentration of acid refers to number of males of acid in a
	volume. Bitration using an indicator cannot be used to
1 7.00	austriguish between a weak and a strong acid- it they
	have the same concentration they will have the same end
	Point.
	Florid donasition is a source of the Maria and the
	Heid deposition is a more general term than acid rain.
	It refers to any process in which acidic substances (particles, gases, and precipitation) leave the atmosphere to be deposited
	on the surface of the Earth. It can be divided into
	wet deposition (acid rain, fog and snow) and dry deposition.
	'Anthropogenic' means produced by human activities-
	and the many the second of the
	$H_2O_{(1)} + CO_{2(9)} \rightleftharpoons H_2(O_3(aq))$
	seigned audito exellerations to
	H2CO3(a) + HCO3 (aq)
	$S_{151} + O_{2/9} \longrightarrow SO_{2}$ $N_{2} + O_{2} \longrightarrow 2NO$
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
	SO3 + H20 - H2SO4 NO2 + HO0 - HNO3
	1 2 1 1 2 2 1 1 2 2 2 1 1 2 2 2 2 2 2 2
-	or 502 + H20 -> H2503 or 4NO2 + O2+2H20 -> 4HNO3
	2NO2 + H2O -> HNO2 + HNO3

	Free radicle is a species with an upunpaired electron- highly reactive.
\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.	File radicle is a speaks with
	highly reactive.
	16
-	Problems - Vegetation - reacts with ions in soil like Mg <sup>24</sup> which are needed to produce chlorophyll.
	- Vegetation - reacts with ions in soul like Mg which are
	needed to produce chlorophyll.
	· lakes and rivers - aquatic life are sensitive to the pH falling
1	cases and two.
	Oillie and do to acid min (linestone and north)
9,41, 1, 1	· Buildings - erode due to acid rain. (limestone and martle)  Cacozet HzSO4(aq) -> Caso4(st HzO(1) + COz(q)
· ·	(alOzest H2504(aq) - (aso4(s) + co2(q)
	t and a
	6 Homan health
	was the second to the second t
	catalytic converters
<u> </u>	removing sulfer before burning fuels
-	using renewable energy sources
: -	making greater use of public transport
_	lining of lakes
	designing efficient power stations-
	designing efficient power staturis-
	1 10 - 1- 100-1 -
	desulforisation - before burning
	reacting it with calcium suide, calcium carbonate
	GCO3 + SO2 - ) (aSO3 + CO2
	City and the second of the sec
	HA(aq) = H(aq) + A(aq)
	$K_{a} = [A^{-}][H^{+}]$ $K_{a} = [O^{-pka}]$
	THAT .
	pka = -log ka
	J10

-	The 1-last Hand C 11 Mars 1 1 To 1
-	The higher the value of Ka, the stronger the acid. The lower the value of pka the stronger the acid.
	the value of pka the stronger the acid.
-	Ka and pka are better measures of acid strength than pH
	tecome because the values to I loss I as the conceptation
<u>.</u>	of the acid - K
	of the acid - Ka and pKa depend only on temperature.
0.00	
-	B + HEO = BH+ OHT
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	Ky = [BH+] [OH-] pKy = -log Ka
	[B]
	Ky = 10° PK6
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
X	
Conc	POH = - log [OH Caqs]
	pKn = pH + pOH pH + pOH = 14
	KaxKy=Kn pKa+pKy=pKn
	Strong acid - strong base
12.5	strong acros - suong base
	Total State
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	Anna Control of the C