Science 30	Unit B: Chemistry
Lesson 2 - Chemistry of Acids and Bases	84 mins

The Release of Chemicals



wet deposition: gases or particles that are removed from the atmosphere by water (liquid or solid) and deposited as precipitation

dry deposition: gases or particles that are transported by winds and absorbed by Earth's surface

Acids, Bases and Neutral Compounds	
Acid - Have and release hydrogen ions in water	electrolytic (conducts a current) corrosive turns blue litmus red reacts with active metals (e.g., Mg, Zn, and Fe) to produce hydrogen gas neutralized by bases and basic solutions tastes sour
Base - produces OH ions in water	electrolytic (conducts a current) corrosive turns red litmus blue feels slippery (when diluted) neutralized by acids and acidic solutions tastes bitter
Neutral - may produce ions in water but not H or OH	can be electrolytic (if solute is an ionic compound) does not change red or blue litmus

Acids, Bases and Neutral Compounds

Determining if a Substance is and Acid, Base or Neutral

 Dissociate in water (split into ions) If H produced, Acid If OH produced, Base If Neither is produced neutral 	Arrhenius Acids and Bases

Modified Arrhenius Theory

$\begin{array}{rl} \text{Na}_2\text{CO}_{3(\text{aq})} \rightarrow 2\text{Na+}_{(\text{aq})} + \text{CO}_3\text{2-}_{(\text{aq})} \\ \text{-} & \text{No OH-} \dots \text{ but is a base} \end{array}$

 $\rm CO_32\mathchar`-$ is strong enough to pull hydrogen ions off WATER.. Thus creating OH-

Hydronium (The Acid Molecule)

- Hydrogen ions are just free protons
- Water Picks up these protons from there polar nature.



Brønsted-Lowry Acid-Base

Pg. 12 of Data Booklet - Acids PRODUCE protons - Bases ACCEPT protons	acid : the substance that donates or loses a hydrogen ion to another substance during a chemical reaction
 Depending on the strength of the base of acid could act as either. WATER 	base : the substance that accepts or gains a hydrogen ion from another substance during a chemical reaction
	conjugate acid : an acid formed in an acid-base reaction when a base accepts a hydrogen ion (or proton)
	conjugate base : a base formed in an acid-base reaction when an acid donates a hydrogen ion (or proton)

Writing Brønsted-Lowry Acid-Base Reactions

Solution step 1: Locate H_5(sq) and H_0(t) on the "Table of Acids and Bases." FALL OF ACIDS AND BASES Acid Formula Acid Formula Conjugate Base Formula hydrocatoric acid H_50(prq) H=50(prq) mitrix acid H=50(prq) H=50(prq) hydrocatoric acid here acids and the base. FALL OF ACIDS AND BASES Acid Name Acid Formala H=50(prq) H=50(prq) hydrocatoric H=50(prq) H=50(prq) hydrocatoric acid H=50(prqq) H=50(prqq) hydrocatoric acid H	step 1: Locate H ₂ S(aq) and H ₂ O(t) on the "Table of Acids and Bases." 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The acid is H_5(aa) Ho(0) & HO(xa) & HO(x) \\ \hline \textbf{step 2: Write the reactuant side of the chanical equation. \\ \hline \textbf{H_5}(aa) + \textbf{H_0}(0) & \rightarrow \\ \hline \textbf{step 4: Identify the conjugate forms of the acid and the base. \\ \hline \textbf{Table C f ACIDS AND BASES} \\ \hline \hline \hline \textbf{horizontation Ho(jaa)} & HO(jaa) $	$\label{eq:response} \begin{split} \hline \begin{array}{ c c c c } \hline Acid Formula & Conjugate Base Formula \\ \hline Prydrochionic acid & H-O(Reg) & O'(Reg) \\ & suttine acid & H+O(Reg) & H+O_0(Reg) \\ & mtra acid & H+O(Reg) & H+O_0(Reg) \\ & mtra acid & H+O(Reg) & H+O(Reg) \\ & Prydromiumicon & H+O(Reg) & H+O(Reg) \\ & Prydromiumicon & H+O(Reg) & H+O(Reg) \\ & Prydromiumicon & H+O(Reg) & H+O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & H+O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & H+O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & O(Reg) \\ & Prydrogen catoronale con \\ & H+O(Reg) & Prydrogen catoronale con \\ & Prydrogen catoronale con \\ & H+O(Reg) & Prydrogen catoronale con \\ & H+O(Reg) & Prydrogen catoronale con \\ & H+O(Reg) & Prydrogen catoronale con \\ & Prydrogen catoro$	$\label{eq:response} \begin{array}{ c c c c } \hline Acid Name & Acid Formula & Conjugate Base Formula \\ Prytrochote and & HCD at \\ Prytrochote and the brow in the restorman Prytrop at \\ Prytrochote and the brow in the restorman Prytrop at \\ Prytrochote and the brow in the restorman Prytrop at \\ Prytrochote and the brow in the restorman Prytrop at \\ Prytrochote and the brow in the restorman Prytrop at \\ Prytrop a$	Acid Name Acid Formula Conjugate Base Formula hydrochloric acid HC(lag) Cr(ag) authric acid HC(lag) Cr(ag) ntrice acid HC(lag) HC(lag) ntrice acid HC(lag) HC(lag) ntrice acid HC(lag) HC(lag) ntrice acid HC(lag) HC(lag) hydrogenetic icon HC(lag) HC(lag) hydrogenetic icon HC(lag) HC(lag) hydrogenetic icon HC(lag) HC(lag) hydrogenetic acid HS(lag) HS (lag) hydrogenetic acid HS(lag) HS (lag) hydrogenetic acid HS(lag) FR (lag) hydrogenetic acid HS(lag) CO(2 ⁺ lag) hydrogenetic acid HS(lag) CO(2 ⁺ lag) y the sciel and the stronger sciels specar lower in the Conjugate Base Formula Column. ordis H_S(lag) because it appears lighter in the column than H_Q(l). The base is H_Q(l). HC (lag) y the conjugate forms of the acid and the base. Extents is the opear lighter in the conjugate Base Formula ig(a) + H_Q(l) -	Acid Name Acid Formula Conjugate Base Formula hyperocluste and sufficie and intre and intre and hyperocluste and intre and hyperocluste and hyperocluste and proceediments in the and hyperocluste and proceediments in the and hyperocluste and hyperocluste hyperoclust	Acid Name Acid Formula Corjugate Base Formula vgerosine acid $H_3(Rg)$ $Cr(Rg)$ saturic acid $H_3(Rg)$ $HSO_1(Rg)$ write acid $H_3(Rg)$ $HSO_1(Rg)$ write acid $H_3(Rg)$ $HSO_1(Rg)$ write acid $H_3(Rg)$ $HSO_1(Rg)$ write acid $H_3(Rg)$ $HSO_1(Rg)$: : : : : : : : : : : : : : : : : : : : : : :	$\label{eq:constraints} \begin{array}{ c c c c c } \hline Acid Name & Acid Formula & Conjugate Base Formula \\ \hline Prytrochoic acid & H-Clog & Cr (ac) \\ matrix acid & H-SO (ac) & H-SO (ac) \\ matrix acid & H-SO (ac) & H-SO (ac) \\ prytrosham lon & H-Clog & H-SO (ac) \\ prytrosham lon & H-Clog & H-SO (ac) \\ prytrosham lon & H-Clog & H-SO (ac) \\ prytrosham lon & H-SO (ac) & H-SO (ac) \\ prytrosham lon & H-SO (ac) & H-SO (ac) \\ prytrosham lon & H-SO (ac) & H-SO (ac) \\ prytrosham lon & H-SO (ac) & H-SO (ac) \\ prytrosham lon & H-SO (ac) & H-SO (ac) \\ prytrosham lon & H-SO (ac) & Pr (ac) \\ prytrosham lon & H-SO (ac) & Pr (ac) \\ protophrate & H-SO (ac) \\ protophrate & H$	$\label{eq:constraints} \begin{array}{ c c c c } \hline Acid Name & Acid Formula & Conjugate Base Formula \\ Prytecotoric acid & HClag & CT(ac) \\ utilities acid & HClag & CT(ac) \\ utilities acid & HClag & HClag & HClag \\ mitic acid & HClag & HClag & HClag \\ hydronium ion & H(Pila) & HClag & HClag \\ \vdots & \vdots & \vdots & \vdots \\ promothymol blae & HBlcag & BC(ag) \\ presophthalen & HPlag & HF(ag) \\ presophthalen & HPlag & HF(ag) \\ i & i & i & \vdots \\ hydrogen catocate ion & HClag & HClag & HClag \\ hydrogen catocate ion & HClag & HClag & HClag \\ i & i & i & \vdots \\ hydrogen catocate ion & HClag & HClag & HClag & HClag \\ hydrogen catocate ion & HClag & HCla$	$ \begin{array}{ c c c c } \hline Acid Name & Acid Formula & Conjugate Base Formula \\ \hline Prystochiotic acid & H(30) & H(30) & H(30) \\ \hline mitric acid & H(50) & M(3) & H(30) & H(30) \\ \hline mitric acid & H(50) & M(3) & H(30) & H(30) \\ \hline mitric acid & H(50) & M(30) & H(30) & H(30) \\ \hline mitric acid & H(50) & H(30) & H(30) & H(30) \\ \hline mitric acid & H(50) & H(50) & H(50) & H(50) \\ \hline mitric acid & H(50) & H(50) & H(50) & H(50) \\ \hline mitric acid & H(50) & H(50) & H(50) & H(50) & H(50) \\ \hline mitric acid & H(50) & H(50) & H(50) & H(50) & H(50) & H(50) \\ \hline mitric acid & H(50) \\ \hline mitric acid & H(50) & H(5$	$\label{eq:constraints} \begin{array}{ c c c c } \hline Acid Hormula & Corigingto Blase Formula \\ \hline Prydrochiotic acid & H-C(pa) & Cripic (pa) \\ \hline Hormula & H-C(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-C(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-C(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-C(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-R(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-R(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-R(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) & H-C(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) & H-C(pa) & H-C(pa) & H-C(pa) & H-C(pa) \\ \hline Hormula & H-R(pa) & H-C(pa) &$	Acid Name Acid Formula Conjugate Base Formula hydrochino acid HCl(ac) Cl (ad) suture acid HSO(ac) HSO(ac) mtra acid HSO(ac) HSO(ac) hydronum on HO(ac) HSO(ac) tydronum on HO(ac) HSO(ac) tydronum on HSV(ac) HSV(ac) tydronum on HSV(ac) HSV(ac) tydronum on HSV(ac) HSV(ac) prenochymol blue HBE(ac) HSV(ac) tig Image HSV(ac) tydronum cattornate lon HCl(ac) Image varies (56.5 molt.) HOW Gov 4Lobardy Borling Image varies (56.5 molt.) HOW Gov 4Lobardy Borling Borling Acid Permuta comm and the stronger lower in the Conjugate Bave Formula comm. Acid Permuta column and the stronger lower in the Conjugate Bave Formula column.	Acid Name Acid Formula Conjugate Base Formula hydrochloric axid HC(acj Cr (ad) suturio axid H,50 (ad) HSO (ad) intra axid H,00 (ad) HSO (ad) hydrontumion H,01 (ad) HSO (b) hydrontumion H,01 (ad) HSO (b) hydrontumion H,01 (ad) HSO (b) hydrontumion H,80 (ad) HS (ad) hydrontumion H,80 (ad) HS (ad) phenotymol blue HB(ad) HS (ad) hydrogen carbonale ion HO0 (b) DO (b) indigo carmine H2(ad) DC (b)	Acid Name Acid Formula Conjugate Base Formula hydrochloric acid HClad C'(ad) sutturic acid HSO(ad) HSO(ad)	Acid Name Acid Formula Conjugate Base Formula hydrochioric acid HC(ac) Cr (ac)	Acid Name Acid Formula Conjugate Base Formula hydrochlofe acid HO((ac) Cr((ac)	Acid Name Acid Formula Conjugate Base Formula
$\label{eq:second} \begin{array}{ c c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:response} \begin{split} \hline \begin{array}{ c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c } \hline \label{eq:constraint} \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{ c c c c c } \hline hydrochloric acid & HO[ac] & G7(ac] \\ \hline suffacts acid & HO_{1}(ac] & HO_{1}(ac] \\ rither acid & HO_{1}(ac] & HO_{2}(ac] \\ hydrochloric acid & HO_{1}(ac] & HO_{2}(ac] \\ \hline hydrochloric bis & H & HO_{1}(ac] & HO(0) \\ \hline r & & r & r \\ \hline hydrochloric bis & HB(ac] & B0(ac] \\ hydrochloric bis & HO(ac] \\ h$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\label{eq:constraints} \begin{array}{ c c c c c } \hline h(c)(c) & Cr(c)(c) & Cr(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)(c)($	hydrochloric add HClag Cr (hd) suttrate add H,SO,Rel HSO (Rel) mitra add H,SO,Rel HSO (Rel) mitra add H,SO,Rel HSO (Rel) hydronumion H,O'(Rel) HO(Rel) hydronumion H,O'(Rel) HO(Rel) nydronumion H,O'(Rel) HO(Rel) prenochymol blue HBC(Rd) HD'(Rel) prenochymain H,H(Reg) HS'(Rel) nydrogen cattornate ion HCO(Rel) GO('Rel) indigo camine HE(Reg) Tarlad) water (66.5 mont.) H,O'(Rel) Tarlad) 21: Identify the acid and the base in the receions. Recall that the stronger acids appear higher in the Acid Permuta columm. Additional columm.	hydrochiono axid HO(aq) C1(aq) suturo axid H,SO(aq) HSO(aq) mitro axid H,O(aq) NO((aq) hydronium ion H,O'(aq) H _O (aq) bydronium ion H,O'(aq) H _O (aq) premothymol blue HB(aq) Bb (aq) premothymol blue HB(aq) HS (aq) premothymol blue HB(aq) OQ, (aq) premothymol blue HB(aq) OQ, (aq) indigo carmine HD(aq) Dr (aq)	hydrochiofc acid HC(ag) CI (aq) sulfuric acid H_SO_(aq) HSO_(aq)	hydrochloric acid HCI(aq) CIT(aq)	hydrochloric acid HCl(aq) Cl-(aq)	
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:constraints} \begin{array}{ c c c c c } \hline H & SO(pq) & HSO(pq) & H$	$\label{eq:subtraced} \begin{array}{ c c c c } & H(S_0)(pq) & H(S_0)(pq) \\ \hline mitrix add & H(N_0)(pq) & N_0(pq) \\ \hline N_0(ran) & N_0(raq) & N_0(raq) \\ \hline N_0(ran) & H_0(raq) & N_0(raq) \\ \hline mitrix add & H_0(raq) & H(raq) \\ \hline monotypic blue & Hill(raq) & Bir(raq) \\ \hline monotypic blue & Hill(raq) & Bir(raq) \\ \hline monotypic blue & Hill(raq) & Bir(raq) \\ \hline monotypic blue & H(C_0, raq) & C_0(raq) \\ \hline monotypic blue & H(C_0, raq) & C_0(raq) \\ \hline monotypic blue & H(C_0, raq) & C_0(raq) \\ \hline monotypic blue & H(C_0, raq) & C_0(raq) \\ \hline monotypic blue & H(C_0, raq) & C_0(raq) \\ \hline monotypic blue & H(C_0, raq) & C_0(raq) \\ \hline monotypic blue & H(C_0, raq) & C_0(raq) \\ \hline monotypic blue & Base in the restcions. Rescall that the stronger acids appear higher in the color of the color states formula column. The acid is H_S(raq) because it appears higher in the color state Base formula column. The acid is H_S(raq) because it appears higher in the color states formula column. The acid is H_S(raq) - (D_0) \rightarrow \\ \hline H(S_1(raq) - (D_0) \rightarrow \\ \hline H(S_1(raq) - (D_0) - (D_0) - (D_0) \\ \hline M(S_1(raq) - (D_0) - (D_0) - (D_0) \\ \hline M(S_1(raq) - (D_0) - (D_0) \\ \hline$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$\label{eq:constraints} \begin{array}{ c c c c c } \hline \begin{tabular}{ c c c c } & \begin{tabular}{ c c } & \be$	Identify the acid and the box is in the reactions. Acid Promula Source Tower Source Sour	suttratic sald H (SO (sc)) H (SO (sc)) mitric sald H (SO (sc)) NO (sc) hydroxium (on H (C) (sc)) H (C) (sc) brondbymol blue H (Sig) H (C) (sc) prydroxium (cald) H (Sig) H (Sig) prydroxium calds H (Sig) H (Sig) phinolphillein H (N) (sc) H (Sig) hydrogen cathorate (on H (C) (sc) C O (sc) indigo cammine H (C) (sc) C O (sc)	sulfuric acid H _s SO (aq) HSO (aq)			
$\label{eq:response} \begin{array}{ c c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	Internation HOG, and HOG (and) HOG (and) HOG (and) i i transformed base promotifymot blue HB(Reg) BD (Reg) promotifymot blue HD(Reg) DC (Reg) indigo cammon HO(Reg) DC (Reg) water (85.6 mod.) HO(Reg) DC (Reg) water (85.7 mod.) HO(Reg) DC (Reg) water (85.6 mod.) HO(Reg) DC (Reg)	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\label{eq:constraints} \begin{array}{ c c c c c } \hline retro acid & i+so_0[ac] & No_1(ac] & No_2(ac) \\ \hline hydronumic on & H_0O(bc) & H_0O(b) \\ \hline hydronum cancel & H_0(bc) & H_0(bc) & H_0(bc) \\ \hline hydrogen catronals ion & H_0O_0(ac) & Pr(ac) & Pr(ac) \\ \hline hydrogen catronals ion & H_0O_0(ac) & O_0^+(ac) & Pr(ac) & Pr$	refre add HHO_(RG) NO_(RG) hydroniumion H ₁ O(RG) HOO(RG) bronnothymot blue HBC(RG) BD (RG) hydroxiumo acid H_B(RG) HS (RG) phenophthalein HP(RG) Ph (RG) hydrogen carbonate ion HOO(RG) CO_{1}^{-1}(RG) hydrogen carbonate ion HOO(RG) CO_{2}^{-1}(RG) indigo carmine HO(RG) D (RG) vater (56.5 monl.) H_OO) CO (RG) 21: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Pormuta column and the stronger lower in the Conjugate Base Formatia column.	rifts acid HNC/sql NC/sql hydronium ion H,O'(sql) H/O'(sql) bromothymol blue HBC(sql) BD'(sql) hydrosuffure acid HB(sql) BD'(sql) phenophhalen HPY(sql) Phi (sql) hydrogen carbonale lon HOO(sql) CO [*] (sql) Indigo carmine HOO(sql) Er (sql)		surunc acid H ₃ SO ₄ (ad) HSO ₄ (ad)		
$\label{eq:response} \begin{array}{ c c c c c } \hline h_{Q}(a) & h_{Q}(b) & h_{Q}$	$\label{eq:constraints} \begin{array}{ c c c c } \hline hydronium lon & H_Q(pag) &$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	hydrotumion H, O'fag	$\label{eq:response} \begin{array}{ c c c c c } \hline representation in the observation of the set of t$	hydronumion H,O'jaq) H,O'jaq) i i i bromothymot blue HBC(ad) BD (ad) hydroxuluric and H,B(BB) HS (ad) prenocphtheim HPraga PP (ad) hydroxuluric and HOQ (ad) OQ' (ad) hydroxuluric and the stronger acids spear higher in the conjugate Base Formula column. Hdc(ab Formula column and the stronger acids not base formula column. The acid as th 5(5(a) because it appears higher in the conjugate Base Formula column. Hg (ad) (A) (O) \rightarrow Heatify the conjugate forms of the acid and the base. EDEL OF ACIDS AND BASES	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\label{eq:constraints} \begin{array}{ c c c c } \hline h_1O(a) & \hline h_1O(b) \\ \hline h_1O(b) & \hline h_1O(b) & \hline h_1O(b) \\ \hline h_1O(b) & \hline h_$	hydronium ion H,O'(a) H,OB bromothymol blue HB0(ac) BD (ac) premothymol blue HB0(ac) BD (ac) phromothymol blue H,B(bc) Phromothymol blue vicial phromothymol blue H,D(bc) Phromothymol blue water (65.5 mont.) H,O(b) Chromothymol blue Acid Promuta column and the stronger bases appear lower in the Conjugate Base Formatia column.	hydronium ion H_O ⁽² (a) H _O (0) bromotrymol blue HBr(ac) Bbr (ac) hydroxullurb acid H_B(ac) HS (ac) phenophtalein HFR(ac) HS (ac) hydroxullurb acid H_B(ac) Loc (ac) hydroxullurb acid H_B(ac) Loc (ac)	nitric acid HNO,(aq) NO, (aq)			
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c } \hline b & b & b & b & b & b & b & b & b & b$	brownohtymol blue premoptifymol blue premoptifymalen HB(ag)	Dromothymol blue prenochtmite aud prenochtmite aud prenochtmite aud indigo cammod Hettige under Generationen einer State indigo cammod Hettige water (65.5 mol.) BE (au) Hettige Hettig	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\label{eq:constraints} \begin{array}{ c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	Dromotyme blue hydrocullute acid phenocythiaen HBC(kg) HR(kg) HP(kg) HP(kg) HP(kg) HP(kg) HR(kg) HR(kg) HP(kg) HP(kg) HP(kg) HR(kg)	$\label{eq:constraints} \begin{array}{ c c c c } \hline bromothymot blue & HBk(ag) & Br(ag) & HC(ag) & HC(ag)$	tromothymot blue Haskad Haskad	bromotymot blue HBD(xd) BD (xd) hydrocullure add HB(kg) HS (xd) prienochthalen HPN(xd) Ph (xd) hydrogen carbonate kin HPO(ga) CO [*] (xd) hydrogen carbonate kin HOO(ga) CO [*] (xd)		hitric acid HNO ₂ (aq) NO ₂ (aq)		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:production} \begin{array}{ c c c c c } \hline \begin{tabular}{c} & H & H & H & H & H & H & H & H & H & $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c } \hline transformation & HB(log) & HC(log) & HC(log) \\ \hline hydrosumturka axia & HB(log) & HC(log) & HC(log) \\ \hline hydrogen carbonate lon & HO(log) & HC(log) & HC(log) \\ \hline hydrogen carbonate lon & HO(log) & HC(log) & HC(log) \\ \hline hydrogen carbonate lon & HO(log) & HC(log) & HC(log) \\ \hline hydrogen carbonate lon & HO(log) & HC(log) & HC(log) \\ \hline hydrogen carbonate lon & HO(log) & HC(log) & HC(log) \\ \hline hydrogen carbonate lon & HO(log) & HC(log) & HC(log) \\ \hline hydrogen carbonate lon & HO(log) & HC(log) & HC(log) \\ \hline hydrogen carbonate lon & HO(log) & HC(log) & HC(log) \\ \hline hydrogen carbonate lon & HO(log) & HC(log) & HC(log) & HC(log) \\ \hline hydrogen carbonate lon & HO(log) & HC(log) & HC(log) & HC(log) \\ \hline hydrogen carbonate lon & HC(log) $	$ \begin{array}{c c} \mbox{room}(r) \mbox{that} & \mbox{Higgs} & \mbox{Higgs}$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	bromothymol blue HEb(ad) Bb (ad) hydroculture and H_B(ad) HS (ad) phromophthalan HP(ad) HY (ad) : : :	bromothymol blue HBb(xd) Bb (xd) hydrosuthra add H,B(xd) HS (xd) phrenophhalen HPrivad Phritag Trydrogen carbonale ion HOO ₂ (xd) OO ⁺ ₄ (xd) indigo armine HB(xd) Iz (xd)	Hydronium dat Hydronium Hydronium Hydronium dat	hurteelum lon II O'rad		nitric acid HNO,(aq) NO, (aq)
$\label{eq:production} \begin{array}{ c c c c } \hline \begin{tabular}{l c c c c } \hline \begin{tabular}{l c c c c } \hline \begin{tabular}{l c c c c c } \hline \begin{tabular}{l c c c c c } \hline \begin{tabular}{l c c c c c c } \hline \begin{tabular}{l c c c c c c } \hline \begin{tabular}{l c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c } \hline production to ad & H_{0}(tag) & H^{0}(tag) \\ \hline production to a to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to a & H^{0}(tag) & H^{0}(tag) \\ \hline Production to H^{0}(tag) & H^{0}(ta$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$eq:rescaled_$	rystosultut a cid prenophtalem hydrogen cathonale ion indgo camme water (6.5 mol.) HO(); (ad) 2: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Columna.	nydrozullufo zici H, sjäga H-S (ad) phenophihalen H-Ph(ad) Ph (ad) Nydrogen cathonale kin H-CO, (ad) CO, ¹ (ad) Indigo camine H-Bojarg Iz (ad)			hydronium ion H _s O'(aq) H _s O()	nitric acid HNO,(aq) NO, (aq) hydronium ion H,O'(aq) H,O(t)
$\label{eq:production} \begin{array}{ c c c } \hline Pr(ag) & Pr(ag) \\ \hline Pr(ag) & CO_{1}^{2}(ag) & CO_{2}^{2}(ag) \\ \hline Pr(ag) & CO_{2}^{2}(ag) & CO_{2$	$\label{eq:production} \begin{array}{ c c c c } \hline Pr(ag & Pr(ag &$	eq:product that any product that any product that the product of the pro	$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c} \text{Principle Principle} \\ \hline \text{Principle Principle} \\ \hline \text{Principle Principle} \\ \hline \text{Principle Principle} \\ \hline \text{Principle Principle Principle} \\ \hline Principle $	$\begin{array}{ c c c c c } \hline prenoptifulem & HPReal & Pr (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen cammine & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen cammine & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & CO_s^{-1} (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) & HCO_s (aq) \\ \hline hydrogen castonales lon & HCO_s (aq) \\ \hline hydroge$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\label{eq:prescription} \begin{array}{ c c c c } \hline preconductor of the constraints of the constrain$	phenophhalen HPH2eg PH (ad) hydrogen carbonale ion HCO ₂ (ad) CO ₂ ⁺ (ad) indigo carmine H2(ag) Is rain water (56.5 mold.) H ₂ (0H) OH (ad) 2: Identify the scid and the base in the reaction. Recall that the stronger scids appear higher in the Acid Formula column and the stronger lower in the Conjugate Base Formula column.	phenolphthelen HPP(lag) Ph (lag) : : : tydragen carbonate ion HOC_{1}(aq) OC_{2}(lag) indigo carmine HE(pag) Ior (lag)			hydronium ion H _y O'(aq) H _y O(t)	nthicadd HHO/aq) NO.(aq) hydronitumion H,O'laq) H(00) : : :
$\begin{array}{ c c c c } \hline \hline$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	hydrogen cationals ion HOO, (kg) CO, *(kg) indgo carmine HOO, (kg) $E(kg)$ water (85.6 mod.) ROM CH (kg) lendty the acid and the base in the reaction. ROM CH (kg) lendty the acid and the base in the reaction. ROM ROM lendty the acid site of the chemical equation. RAG(kg) because it appears higher in the column than H_O(t). The base is H_O(t). lendty the acid site of the chemical equation. RAG(kg) O \rightarrow lendty the colugate forms of the acid and the base. DELE OF ACIDS AND BASES Image in the initial HHO_(kg) NO_(kg)	hydrogen cationals ion indgo camine HOO, (ac) HOO, (ac)	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	tydrogen cartonate ion indigo carmine water (6.5. mort.) HOP Hopp HOP	hydrogen carbonate ion HCO ₂ (aq) CO ₂ ⁺ (aq) indigo carmine H2(a)ag Ic (aq)	bromothymol blue HBb(aq) Bb'(aq)	bromothymol blue HBb(ad) Bb'(ad)	hydronium lon H ₄ O [*] (ac) H ₂ O(t) bromothymol blue HBb(ac) Bb (ac)	mbro add HNO_[ltq] NO_[ltq] hydroilulini on H_O'[tq] H_O(t) i i i bronndhymol blue HBb(ad) BD (ad)
$\label{eq:contine} \underbrace{ 44 \text{Grigg}}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{pro})}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 \text{ mol}(1))} \\ = \frac{44 \text{Grigg}}{400} \underbrace{ 12^{\circ}(\text{S}.5 \text{ mol}(1))}_{\text{Watter}(65.45 mo$	$\label{eq:controls} \begin{array}{ c c c c } \hline 14c(aa) & 1c'(aa) \\ \hline 14c(aa) & 1c'(aa) \\ \hline 14c(ab) & 0c'(aa) \\ \hline 14c(ab) & 0c'(aa) \\ \hline 14c(ab) & 0c'(ab) \\ \hline 14c(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) \\ \hline 14c(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) \\ \hline 14c(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) \\ \hline 14c(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) \\ \hline 14c(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) \\ \hline 14c(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) \\ \hline 14c(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) & 0cc'(ab) \\ \hline 14c(ab) & 0cc'(ab) & 0$	$\begin{array}{ c c c c } \hline \label{eq:control} & \frac{1}{16}(c_{BQ}) & \frac{1}{16}(c_{BQ}) \\ \hline \mbox{matr} (65.5 \mbox{mol},) & H_{1}(00) & OH([a_{B}]) \\ \hline \mbox{matr} (65.5 \mbox{mol},) & H_{2}(00) & OH([a_{B}]) \\ \hline \mbox{matr} (56.5 \mbox{mol},) & H_{2}(00) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_$	$\label{eq:continue} \begin{array}{c c c c c } HO(m) & Gr(aq) \\ Water (65.5 mort) & HO(m) & Orr(ac) \\ Y de acid and the base in the resection. Recall that the stronger acids appear labeler in the formula column and the stronger base spear lower in the Conjugate Base Formula column. eacid is H_{2}(aq) because it appears higher in the column than H_{2}(0). The base is H_{2}(0), the reactuats side of the chemical equation. (aq) + H_{2}(0) \rightarrow U y the conjugate forms of the acid and the base.TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula in rate acid is HO(par) in HO_{2}(aq) in HO_{2}(aq) $	Indigo camme $i d_{D(0)}$ $i c_{D(0)}$ wate (55.5 mott). $H_i O(0)$ OH (max) se acid and the base in the reaction. Recall that the stronger acids appear higher in the conjugate Base Formula column and the stronger base in the Conjugate Base Formula column. aid s H_S(s(a) because it appears higher in the column than H_O(0). The base is H_O(0). teaction is do the choice column than H_O(0). The base is H_O(0). teacting the science column than H_O(0). The base is H_O(0). b H_O(0) \rightarrow teaconjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:constraints} \begin{array}{c c c c c } H_{0}^{1}(c) & I_{0}^{1}(c) \\ I_{0}^{1}(c) & O^{1}(c) \\ I$	$\begin{array}{ c c c c } \mbox{ind} & \mbox{if} (SLS mod.) & \mbox{if} (SLS mo$	$\begin{array}{ c c c c } traje carmine & tdc(ap) & L^{c}(ap) \\ water (65.5 mol.) & M_{c}(00) & Ort (az) \\ \hline \\ \end{tabular}$ the acid and the base in the reactions. Recall that the stronger acids appear higher in the romania column must the stronger bases appear lower in the Conjugate Base Formala column. acids its $R_{c}(3a)$ because it appears higher in the column than $H_{c}(0)$. The base is $H_{c}(0)$. The reactants side of the chemical equation. ($ap + H_{c}(0) \rightarrow y$) the conjugate forms of the acid and the base.	$\label{eq:constraint} \begin{array}{ c c c c } \mbox{id} p & Ic(pa) & Ic(pa)$	indpo carmine idopa In range water (65.5 mort.) H_000 Cr (range) 2: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column.	Indigo carmine HIc(aq) Ic (aq)	bromothymol blue HBb(ad) Bb'(ad) hydrosullurio acid H_S(ad) HS (ad)	bromothymol blue HBIc(adj Bb' (adj hydrosulturto acid HA[c(adj HS) (ad)	Rydronium Ion H_O'(sa) H_O(t) :: : : bromothymol blue HBR/adj Bb'(sa) hydrosouturio axid H, Bladj HS (sa)	rife:ro.aid I+No_jacj NO_(teg) hydroniumi kon H_O(teg) H_O(ty) i i i bromothymol blue HBD(teg) BD (teg) hydrosillute aidd HB(teg) HB (teg)
$\label{eq:control} \begin{array}{ c c c c } \hline H_{0}(\alpha) & I^{c}(\alpha) \\ \hline H_{0}(\alpha) & O^{c}(\alpha) & O^{c}(\alpha) \\ \hline H_{0}(\alpha) & O^{c}(\alpha) \\ \hline H_{0}(\alpha$	$\label{eq:continue} \begin{array}{ c c c c } \hline 1c(c) & 1c(c) \\ \hline 1c(c) & 1c($	$\begin{array}{ c c c c } \hline \label{eq:control} & \frac{1}{16}(c_{BQ}) & \frac{1}{16}(c_{BQ}) \\ \hline \mbox{matr} (65.5 \mbox{mol},) & H_{1}(00) & OH([a_{B}]) \\ \hline \mbox{matr} (65.5 \mbox{mol},) & H_{2}(00) & OH([a_{B}]) \\ \hline \mbox{matr} (56.5 \mbox{mol},) & H_{2}(00) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_$	$\label{eq:continue} \begin{array}{c c c c c } HO(m) & Gr(aq) \\ Water (65.5 mort) & HO(m) & Orr(ac) \\ Y de acid and the base in the resection. Recall that the stronger acids appear labeler in the formula column and the stronger base spear lower in the Conjugate Base Formula column. eacid is H_{2}(aq) because it appears higher in the column than H_{2}(0). The base is H_{2}(0), the reactuats side of the chemical equation. (aq) + H_{2}(0) \rightarrow U y the conjugate forms of the acid and the base.TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula in rate acid is HO(par) in HO_{2}(aq) in HO_{2}(aq) $	Indigo camme $i d_{D(0)}$ $i c_{D(0)}$ wate (55.5 mott). $H_i O(0)$ OH (max) se acid and the base in the reaction. Recall that the stronger acids appear higher in the conjugate Base Formula column and the stronger base in the Conjugate Base Formula column. aid s H_S(s(a) because it appears higher in the column than H_O(0). The base is H_O(0). teaction is do the choice column than H_O(0). The base is H_O(0). teacting the science column than H_O(0). The base is H_O(0). b H_O(0) \rightarrow teaconjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:constraints} \begin{array}{c c c c c } H_{0}^{1}(c) & I_{0}^{1}(c) \\ I_{0}^{1}(c) & O^{1}(c) \\ I$	$\begin{array}{ c c c c } \mbox{ind} & \mbox{if} (SLS mod.) & \mbox{if} (SLS mo$	$\begin{array}{ c c c c } traje carmine & tdc(ap) & L^{c}(ap) \\ water (65.5 mol.) & M_{c}(00) & Ort (az) \\ \hline \\ \end{tabular}$ the acid and the base in the reactions. Recall that the stronger acids appear higher in the romania column must the stronger bases appear lower in the Conjugate Base Formala column. acids its $R_{c}(3a)$ because it appears higher in the column than $H_{c}(0)$. The base is $H_{c}(0)$. The reactants side of the chemical equation. ($ap + H_{c}(0) \rightarrow y$) the conjugate forms of the acid and the base.	$\label{eq:constraint} \begin{array}{ c c c c } \mbox{id} p & Ic(pa) & Ic(pa)$	indpo carmine idopa In range water (65.5 mort.) H_000 Cr (range) 2: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column.	Indigo carmine HIc(aq) Ic (aq)	bromothymol blue HBb(ad) Bb'(ad) hydrosullurio acid H_S(ad) HS (ad)	bromothymol blue HBb(adj Bb'(ad) hydrosulturto acid HJB(adj HS (ad)	Rydronium Ion H_O'(sa) H_O(t) :: : : bromothymol blue HBR/adj Bb'(sa) hydrosouturio axid H, Bladj HS (sa)	rife:ro.aid I+No_jacj NO_(teg) hydroniumi kon H_O(teg) H_O(ty) i i i bromothymol blue HBD(teg) BD (teg) hydrosillute aidd HB(teg) HB (teg)
water (65.6 mol.) ij.00 OH (mg) step 2: Identify the acid and the base in the reaction. Recall that the stronger acids oppear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The scid is H,5(mg) because it appears higher in the column than H,O(1). The base is H,O(1). step 3: Write the reactmats side of the chemical equation. $H_2S(mg) + H_2O(1) \rightarrow$ step 4: Identify the conjugate forms of the acid and the base. TAELE OF ACIDS AND BASES Acid Hame Acid Formula Conjugate Base Formula i : : i	water (65.6 mol.) H(00) OH (mq) step 2: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The scid is H,5(mg) obsense it appears higher in the column than H,O(1). The base is H,O(1). step 3: Write the reactmats side of the chemical equation. $H_25(mg) + H_2O(1) \rightarrow$ step 4: Identify the conjugate forms of the acid and the base. BELE OF ACIDS AND BASES Table OF ACIDS AND HASES in the acid Home intra acid Home Acid Formula intra acid HO() H(20) in the property H(20)	water (63.6 mol.) H_Q000 OH (ma) Bendly the acid and the base in the resortion. Recall that the stronger acids appear labeler in the cid cid cid formutal column. The acid is H_S(laq) because it appears higher in the column than H_Q0(1). The base is H_Q0(1). The acid is H_S(laq) because it appears higher in the column than H_Q0(1). The base is H_Q0(1). The base is H_Q0(1). Vite the reactumts side of the chamical equation. H_Q(ma) H_Q5(ma) + H_Q0(1) -> Hearthy the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Important on the strong is the strong is the important of the acid is the important of the strong is the important of the strong is t	water (65.5 mod.) H_O(0) OH (ac) y the scid and the base in the reaction. Recall that the stronger scids appear higher in the formation of the stronger bases appears how in the Conjugate Base Formula column and the stronger bases appears higher in the conjugate Base Formation (Sau) + H_O(1). The base is H_O(1), the reaction side of the chemical equation. scial is H_S(aq) because it appears higher in the column data H_O(1). The base is H_O(1), the reactions side of the chemical equation. Scial (A) + H_O(1) - V y the conjugate forms of the acid and the base. EAELE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula if and if is acid HNO_(aci) NO_(aci)	water (55.5 most.) H_Q0() OH (ma) as exid and the basis in the reaction. Recall that the stronger acids appear higher in the main and otherm and the stronger bases appear lower in the Conjugate Base Formula column is dis H_S(aq) because it appears higher in the column than H_O(0). The base is H_O(1). reaction is die of the chemical equation. $p) + H_O(0) \rightarrow$ ac columns of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	$\begin{array}{c c} \label{eq:response} \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	water (55.5 molt) H, Q00 Of (aq) infly the scid and the base in the reaction. Recall that the stronger acids appear higher in the differential column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is $H_1S(aq)$ because it appears higher in the column than $H_2O(t)$. The base is $H_2O(t)$. it the hereactums side of the chemical equation. $H_2S(aq) + E_2O(t) \rightarrow$ mitfy the conjugate forms of the acid and the base.	water (52.6 mol.) 40,00 CH (acj Benify the acid and the base in the reaction. Recall that the stronger acids appear higher in the disc formutan columm and the stronger bases appears lower in the Conjugnst Base Formula column. The acid is $H_{\nu}S(aq)$ because it appears higher in the column than $H_{\nu}O(t)$. The base is $H_{\nu}O(t)$. The acid is $H_{\nu}S(aq)$ because it appears higher in the column than $H_{\nu}O(t)$. The base is $H_{\nu}O(t)$. The base is the column than $H_{\nu}O(t)$. The base is $H_{\nu}O(t)$. With the acciding the column than $H_{\nu}O(t) \to H_{\nu}O(t) \to H_{\nu}O(t)$. The base formula column. Benify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES	water (55.5 mc/A) H_(Q0) OF (aq) y the acid and the base in the reaction. Recall that the stronger scale sppear largher in the formula columna and the stronger bases and permula columna and the stronger bases appear lower in the Columpte Base Arrowshill, the react that side of the chemical equation. acid is H_5(aq) because it appears higher in the column than H_O(1). The base is H_5O(1). he react that side of the chemical equation. (a) + H_O(1) \rightarrow y the conjugate Bose forms of the acid and the base.	$\label{eq:constraint} \begin{array}{ c c c c } \hline water (55.5 \mbox{mod}.) & H_{\rm O}(0) & CH(az) \\ \hline \\ \hline \mbox{identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is H_5(a_0) because it appears higher in the column than H_2O(1). The base is H_2O(1). \\ \hline \mbox{Wite the restarts side of the chemical equation.} \\ H_5(a_0) + H_2O(1) \rightarrow \\ \hline \end{array}$	water (55.5 molt.) H ₁ O() OH (ac) 2: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column.		bromothymol blue HBb(ad) Bb'(ad) hydrosutlurio axid <mark>H,§leag</mark> HS (ad) phenophthalein HPhtag Pht (ad)	bromothymol blue HB2(ad) Bb (ad) hydrosufuria add HA2(ad) HS (ad) phenophthalen HP1(ad) Ph (ad)	hydronium lon H ₁ (O'(aq) H ₂ (on) bromothymol blue Hitic(aq) Bb (aq) hydroxuturko axid H ₂ (bag Hiti Faq) phenoiphthalein HPP(aq) Ph (aq)	nthe audi H-No, Jang N-O, Tang H-O,
step 2: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger base appear lower in the Conjugate Base Formula column. The acid is $H_{2}(s_{02})$ because it appears higher in the column than $H_{2}(0)$. The base is $H_{2}(o_{02})$ because it appears higher in the column than $H_{2}(0)$. The base is $H_{2}(o_{02}) + H_{2}(0) \rightarrow$ step 3: Write the reactuants side of the chemical equation. $H_{2}(s_{02}) + H_{2}(0) \rightarrow$ step 4: Identify the conjugate forms of the acid and the base. TALE OF ACIDS AND BASES Acid Name Acid Formata Conjugate Base Formula $H_{2}(a_{02})$ H ₂ (0) (adj hydronumion H ₄ (0)(adj hydronumion H ₄ (0	step 2: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger base appear lower in the Conjugate Base Formula column. The acid is H ₂ S(aq) because it appears higher in the column than H ₂ O(1). The base is H ₂ O(2), step 3: Write the reactuants side of the chemical equation. $H_2S(aq) + H_2O(0) \rightarrow$ step 4: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formulas in the acid in HoO ₂ (aq) H ₂ O(0) $H_2O(0)$ H ₂ O(0) H	$\label{eq:constraint} \begin{array}{c} \text{Hendify the acid and the base in the reaction. Recall that the stronger acids appear higher in the chiral column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is H_5(a_0) because it appears higher in the column than H_0(1). The base is H_0(1). While the reactants side of the chemical equation. \\ H_5(a_0) + H_0(0) \rightarrow \\ \text{lemify the conjugate forms of the acid and the base.} \\ \hline \textbf{TABLE OF ACIDS AND BASES} \\ \hline \textbf{Acid Name} & \textbf{Acid Formula} & \textbf{Conjugate Base Formula} \\ \hline H_{NO_0[a_1]} & NO_0[a_2] & NO_0[a_2] \\ \hline \end{array}$	y the acid and the base in the reaction. Recall that the stronger acids appear higher in the formula column and the stronger bases appear lower in the Conjugate Base Formula column. each is $H_2(\alpha_0)$ because it appears higher in the column than $H_1O(1)$. The base is $H_2O(1)$, the reactants side of the chemical equation. $b(\alpha_0) + H_2O(1) \rightarrow$ y the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula intra acid HMO_(acj NO) (acj NO)	The scid and the base in the reaction. Recall that the stronger acids appear higher in the mula column and the stronger bases appear lower in the Conjugate Base Formula column. Id is $H_2(G_0)$ because it appears higher in the column than $H_2(O_0)$. The base is $H_2(O_0)$. The test is $H_2(O_0)$. The base is $H_2(O_0)$ are conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	trid and the base in the reaction. Recall that the stronger acids appear higher in the a column and the stronger bases appear lower in the Conjugate Base Formula column. Is H ₂ S(aq) because it appears higher in the column than H ₂ O(1). The base is H ₂ O(1). crants side of the chemical equation. H ₂ O(1) → conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES	unify the acid and the base in the reaction. Recall that the stronger acids appear higher in the id Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is $H_{ij}(\alpha_0)$ because it appears higher in the column than $H_{ij}(\Omega)$. The base is $H_{ij}(\Omega)$, it is the reactuants side of the chemical equation. $H_{ij}(\alpha_0) + H_{ij}(\alpha_0) \rightarrow H_{ij}(\alpha_0) + H_{ij}(\alpha_0) \rightarrow 0$.	learnify the acid and the base in the reaction. Recall that the stronger acids appear higher in the kcid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The scid is $H_s(o_0)$ because it appears higher in the column than $H_s(O_i)$. The base is $H_s(O_i)$. Write the reactants side of the chemical equation. $H_s(So_0) + H_s(O_i) \rightarrow J$ dentify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES	y the acid and the base in the reaction. Recall that the stronger acids appear higher in the ormula column and the stronger bases appear lower in the Conjugate Base Formula column. acid is $H_cO(t)$. The base is $H_cO(t)$, the reactants side of the chemical equation. (ap $H_cO(t) = 0$) and $H_cO(t) = 0$. (ap $H_cO(t) = 0$) the conjugate forms of the acid and the base.	I dentify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is $H_1S(a_0)$ because it appears higher in the column than $H_1O(1)$. The base is $H_1O(1)$. Write the reactuant side of the chemical equation. $H_2S(a_0) + H_2O(0) \rightarrow$	2: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column.	was (see most) is a goily contact	bromothymol blue HB2(ad) Bb (ad) nydrozatlanci add H4(blad) H5 (ad) philonotymbalen HP1na2 Phil (ad) :: hydrogen actionate ion HOC) (ad) COC((ad)	bromothymol blue Hitic(ad) Bb (ad) hydrosullufo add H,§Agit H5 (ad) phenophthaten H-Pr(ad) Phr (ad) hydrogen cattornate ion H-Org (ad) CO [®] (ad)	hydronium kon H_(O'ling) H_(Oog) bromothymol blue HBC(ac) Btr (ac) hydrosutlutic acid HB(bac) HS (ac) previoptimum HP(bac) HS (ac) :: :: :: :: :: :: :: :: :: :: :: :: :: :: ::	refice add H-VD_pling NOL (pling) hydronium lon H_(Of loc) H_(Of loc) bromothymot blue HEID(sig) BD (sig) hydrogen cathonale lon H-VP(sig) Phillipsi hydrogen cathonale lon H-OL (sig) CO_(log)
Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :	Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :	Acid Name Acid Formula Conjugate Base Formula ! ! ! ! ribrc acid HNO_(Ba) NO_(Ba) NO_(Ba)	Acid Name Acid Formula Conjugate Base Formula : : : : ritric acid HNO(lat) NO(lat)	Acid Name Acid Formula Conjugate Base Formula								bromotypend blue promotypend blue in indpo carmine water (66.5 mork) HER(ad) HAR(ad) H	bromotrymol blue hydrocoulturic acid premoptituism HB(acid H, B(acid H) HS(acid HS(aci	tydrontamion H_QOing H_QOing bromothymol blue HBC(ag) Btr (ag) mydrontamic acid HB(ag) HF (ag) phonothymol blue HHQuad HF (ag) mydrogen actionate ion HHQuad HF (ag) hydrogen actionate ion HHQuad Er (ag) water (65.65 molt) H_QOB Cor(ag) John Stromala column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is H_5(ag) because it appears higher in the column than H_2O(). The base is H_2O().	refer add HPO_peg NO_reg hydronium ion H_O(teg) H_O(typ) bronndhymo blue HBC(se) BD (se) hydronium ion H_O(teg) BD (se) hydrogen cattoride ion HOO_(teg) DO (* (se) indgo camme H_O(teg) D (* (se) water (teo 5. mout.) HOM D (H (se) Kold Thy the acid and the base in the reaction. Recall that the stronger acids appear higher in the Colligate Base Formula column. The acid is H_S(sq) because it repears higher in the column than H_O(t). The base is H_O(t). Witte the reactasts side of the chemical equation.
i i i intricaid HNO (arg) NO (arg) hydronium ion H_(O)(arg) H_(O(b)) i i i bromothymo blace HBC(arg) BD (arg)	Intro add HNO_(kai) NO_(kai) Hydronium (on H-Q/(kai) H-Q(b) I I I brondlymol blue H-B(bai) B(b (bai))	ntho acid HNO_(aci) NO_(aci)	i i i nitric acid HNO_(aq) NO_(aq)				A 2 4 Provide the second			TABLE OF ACIDS AND BASES	$H_{*}S(aq) + H_{*}O(l) \to$: Identify the conjugate forms of the acid and the base.	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:response} \begin{array}{ c c c c } \hline representation & H_{1}O^{1}(n_{1}) & H_{2}O^{1}(n_{2}) \\ \hline representation & H_{2}O^{1}(n_{2}) & H_{2}O^{1}(n_{2}) \\ \hline representation & H_{2}O^{1}(n_{2}) & H_{2}O^{1}(n_{2}) \\ \hline representation & H^{1}P(n_{2}n_{2}) & H^{1}P(n_{2}n_{2}) \\ \hline representation & H^{1}P(n_{2}$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
nitric adid HNO_(lad) NO_(lad) hydronumion H _i O(lad) H _i O(l) i i i bromothymol blue HBC(ad) Bb (ad)	Inthro adid HNO_(adj NO_(adj hydronium.ion H ₄ O(adj H ₄ O()) bromothymol blue HBb(adj Bb (adj	nitric acid HNO _s (aq) NO _s (aq)	nitric acid HNO _g (aq) NO _g (aq)						And a March 1		$H_sS(aq)+H_sO(l)\to$: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES	$\begin{array}{ c c c c c } \hline monothymot this & \frac{HQ(adj}{HQ(adj)} & Br (adj}{HQ(adj)} & Br (adj}{HQ(adj)} & Br (adj) \\ \hline monothymot this & \frac{HQ(adj)}{HQ(adj)} & H$	$\begin{array}{ c c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c }\hline \hline & H_1(O^{1}(\alpha) & H_1(O^{1}) & H_1(O$	refer add H90,0x0 H0,0x0 hydronumion H,00,0x0 H,00,0x0 bromothymo blue HB0;qx0 H,00,0x0 bromothymo blue HB0;qx0 H0 (x0,0x0) hydrogen H,00,0x0 D (x0,0x0) hydrogen carbonale ion H00,0x0 D (x0,0x0) hydrogen carbonale ion H00,0x0 D (x0,0x0) water (65.5 mol.1) H,00) D (x0,0x0) dcd formula column and the stronger acids appear higher in the column. The acid is H,5(x0,0) because ir appears higher in the column than H,0(1). The base is H_0(1). Write reactures is ide of the chemical equation: H,5(x0,1)
Plydronium lon H_O [*] [aq] H_O(t) : : : : : : : : : : : : : : : : : : : : :	hydronium ion H_O [*] [ad] H_O(t) :: : : :: : : :: : : :: : : :: : : :: : :			The set of the set of the set						Acid Name Acid Formula Conjugate Base Formula	H_S(aq) + H_O(1) → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	$\begin{array}{ c c c c c }\hline \hline & & & & & & & & & & & & & & & & & &$	$\begin{array}{ c c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
i i i bromothymol blue HBb(ag) Bb'(ag)	bromothymol blue HBb(aq) Bb'(aq)		nyaroniumian H ₂ O (aq) H ₂ O(i)	ntric acid HNO ₂ (aq) NO ₂ (aq)						Acid Name Acid Formula Conjugata Base Formula	H_S(aq) + H_O() → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Nume Acid Formula Conjugate Base Formula	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:constraints} \begin{array}{ c c c c } \hline HB(a) & HC(a) $	$\begin{array}{ c c c c c }\hline transformation & H_{1}O(tag) & H_{1}O(ta$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
				hustrankurs inn 11 Office) 11 Office		nitric acid HNO_(aci) NO_(aci)		ritric acid HNO_(aq) NO_(aq)	nitric acid HNO_(ac) NO_(ac)	Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : :	H_S(a(a) + H_O(1) → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula intro acid i+NO_(aci) NO_(aci)	$\begin{array}{ c c c c c }\hline \label{eq:constraint} \hline \begin{tabular}{ c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c }\hline reproduming in the constraint of the constrain$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
			heamed blue (19b/ant) Ph//r=1	hydronium ion H ₂ O'(aq) H ₂ O(i)		nitric acid HNO_(aci) NO_(aci)		ritric acid HNO_(aq) NO_(aq)	nitric acid HNO_(ac) NO_(ac)	Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : :	H_S(a(a) + H_O(1) → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula intro acid i+NO_(aci) NO_(aci)	$\begin{array}{ c c c c c }\hline \label{eq:constraint} \hline \begin{tabular}{ c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c }\hline reproduming in the constraint of the constrain$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
hydrosulfuric acid H S(ad) HS'(ad)		bromothermal blue LIDIvaria Divisio			hydronium ion H ₂ O*(aq) H ₂ O(t)	ntho add HNO_(aq) NO_(aq) hydroniumion H,O'(aq) H,O()	hydronium lon H _i O'(aq) H _i O()	ntire add HNG (aq) NO (aq) hydrollum ion H ₁ O (aq) H ₂ O()	ntino acid HNO_(aci) NO_(aci) hydronium lon H,O'(aci) H,O(b)	Acid Name Acid Formula Conjugate Base Formula : : : : ritro acid HNO_(aci) NO_(aci) NO_(aci) hydronlum H_O'(aci) H_O(h) :	H_S(aq) + H_O(1) → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula Inter acid HNO_(aq) NO_(aq) hydroniumion H_O(aq) H(O(0)	$\begin{array}{ c c c c c }\hline more drived by the set of $	$\label{eq:constraint} \begin{array}{ c c c c } \hline H_{0}^{2}(a_{0}) & H_{0}^{2}(a_{0}) \\ \hline H_{0}^{$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
				bromothymol blue HBb(aq) Bb'(aq)	hydronium (on H _i O [*] (aq) H _i O(i) : : : romothymol blue HBb(aq) Bb'(aq)	rithic acid HNO_[aci] NO_[aci] hydronium (on H_UO'aci] H_UO(b) : : : bronoffyrmol blue HBC(aci] BD (aci]	hydronium lon H ₄ O'(ad) H ₅ O(t) : : : : : bromothymot blue HiBb(ad) BD (ad)	Intro add HNO_[84] NO_[84] Hydroniumion H-Q1xa) H-Q00 bromotlymiol blue H-B04 Bib (ad)	ntinc acid HV0, (acj) N0, (acj) hydronumion H, (O'(acj) H, (O(b)) i i i bromstrymol blue H EBC(acj) ED (acj)	Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :	H_5(aq) + H_0(0) → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula Intro acid H=N0(aq) NO(aq) H_0(0) H_0(0) Br(aq) B(aq) B(aq)	$\begin{array}{ c c c c c } \hline \begin{tabular}{ c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c }\hline transformation & H_{0}^{O(teg)} & H_{0}$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
				bromothymol blue HBb(aq) Bb'(aq)	hydronium (on H _i O [*] (aq) H _i O(i) : : : romothymol blue HBb(aq) Bb'(aq)	rithic acid HNO_[aci] NO_[aci] hydronium (on H_UO'aci] H_UO(b) : : : bronoffyrmol blue HBC(aci] BD (aci]	hydronium lon H ₄ O'(ad) H ₅ O(t) : : : : : bromothymot blue HiBb(ad) BD (ad)	Intro add HNO_[84] NO_[84] Hydroniumion H-Q1xa) H-Q00 bromotlymiol blue H-B04 Bib (ad)	ntinc acid HV0, (acj) N0, (acj) hydronumion H, (O'(acj) H, (O(b)) i i i bromstrymol blue H EBC(acj) ED (acj)	Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :	H_5(aq) + H_0(0) → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula Intro acid H=N0(aq) NO(aq) H_0(0) H_0(0) Br(aq) B(aq) B(aq)	$\begin{array}{ c c c c c } \hline \begin{tabular}{ c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c }\hline transformation & H_{0}^{O(teg)} & H_{0}$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
hydrosulturic acid H ₃ S(aq) HS'(aq)			becaused being (1984/and 1984/and	nitric acid HNO_(aq) NO_(aq)					Acid Name Acid Formula Conjugate Base Formula		$H_sS(aq)+H_sO(l)\to$: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES	$\begin{array}{ c c c c c } \hline monothymod thas & +iRc(ad) & Br (ad) & +iS (ad)$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c }\hline hydronium ion & H_{1}O^{*}(ac) & H_{2}O^{*}(ac) \\ \hline H^{*}_{1} consistent in the second se$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
hydrosulfuric acid H _s S(aq) HS'(aq)			becaused being (1984/and 1984/and	nitric acid HNO_(aq) NO_(aq)						Acid Name Acid Formula Conjugate Base Formula	H_S(aq) + H_O(1) → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	$\begin{array}{ c c c c c }\hline \hline & & & & & & & & & & & & & & & & & &$	$\begin{array}{ c c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
			becaused by an UPb/and Pb//and	hydronium ion H ₂ O'(aq) H ₂ O(i)		nitro acid HNO_(aq) NO_(aq)		ritric acid HNO_(aq) NO_(aq)	nitro acid HNO_(aq) NO_(aq)	Acid Name Acid Formula Conjugate Base Formula : : : : ritro acid HNO_[Sa] NO_[Sa] NO_[Sa]	H_5(aq) + H_O(I) → http://be.conjugate.forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula I I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	bromotypred blue HBQ(x) BD (rat) hydrosulutio and phenophthalem HBQ(x) BD (rat) hydrosulutio and phenophthalem HBQ(x) BD (rat) hydrosulutio and phenophthalem HBQ(x) BD (rat) hydrosulution and phenophthalem HBQ(x) BD (rat) hydrosulution and hydrosulution HOQ (rat) BD (rat) hydrosulution HQ(x) HQ(x)	$\label{eq:rescalar} \begin{array}{ c c c c c c c c c c c c c c c c c c c$	ntre axid HNO_(seq) NO_(seq) hydronumion HO(seq) H(OR) bronthymol blae HB(seq) Bib (seq) hydronumion HB(seq) Do (seq) hydronumion H
			home all and him in the second s	hydronium Ion H ₂ O'(aq) H ₂ O(t)		nitric acid HNO_(aci) NO_(aci)		ritric acid HNO_(aq) NO_(aq)	nifric acid HNO,(aq) NO, (aq)	Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : : : : : : : : : : :	H_S(aq) + H_Q(t) → Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula intro acid HMC (acid NOC (acid NOC (acid)))	$\begin{array}{ c c c c c }\hline monophymod that & HBQad & HC (ag & HC ($	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c }\hline reproduming in the constraint of the constrain$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
	hydrosulturic acid H ₃ S(aq) HS'(aq)		have been been in the second s	hydronium ion H ₂ O*(aq) H ₂ O(t) : :		nitric acid HNO_(aci) NO_(aci)		ritric acid HNO_(aq) NO_(aq)	nitric acid HNO,(aq) NO, (aq)	Acid Name Acid Formula Conjugate Base Formula : : : : intric acid HNO_(Re) NO_(Re)	H_5(sq) + H_O(l) → Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Intro acid HNO_(acid NO_(acid) NO_(acid)	$\begin{array}{ c c c c c }\hline monophymod that & HBQad & HC (ag & HC ($	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
			housed have 100 and 100 and	hydronium Ion H ₂ O'(aq) H ₂ O(t)		nitric acid HNO_(aci) NO_(aci)		ritric acid HNO_(aq) NO_(aq)	ntric acid HNO ₂ (aq) NO ₂ (aq)	Acid Name Acid Formula Conjugate Base Formula : : : : intric acid HNO_[Re] NO_(Re] NO_(Re]	H_S(aq) + H_Q(l) → destify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Intro acid HNO_(acid NO_(acid	$\begin{array}{ c c c c c }\hline \hline & Higgg & $	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
			beenalised blue	hydronium Ion H _s O'(aq) H _s O()		nitric acid HNO_(aci) NO_(aci)		ritric acid HNO_(aq) NO_(aq)	nitric acid HNO_(ac) NO_(ac)	Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : :	H_S(a(a) + H_O(1) → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula intro acid i+NO_(aci) NO_(aci)	$\begin{array}{ c c c c c }\hline monophymod that & HBQad & HC (ag & HC ($	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c }\hline reproduming in the constraint of the constrain$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
				hydronium ion H ₂ O'(aq) H ₂ O(i)		nitric acid HNO_(aci) NO_(aci)		ritric acid HNO_(aq) NO_(aq)	nitric acid HNO_(ac) NO_(ac)	Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : :	H_S(a(a) + H_O(1) → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula intro acid i+NO_(aci) NO_(aci)	$\begin{array}{ c c c c c }\hline monophymod that & HBQad & HC (ag & HC ($	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c }\hline reproduming in the constraint of the constrain$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
				hydronium ion H ₂ O'(aq) H ₂ O(I)		nitric acid HNO_(aci) NO_(aci)		ritric acid HNO_(aq) NO_(aq)	nitric acid HNO_(ac) NO_(ac)	Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : :	H_S(a(a) + H_O(1) → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula intro acid i+NO_(aci) NO_(aci)	$\begin{array}{ c c c c c }\hline monophymod that & HBQad & HC (ag & HC ($	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c }\hline reproduming in the constraint of the constrain$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
				hydronium ion H,O*(aq) H,O(I)		nitric acid HNO_(aci) NO_(aci)		ritric acid HNO_(aq) NO_(aq)	nitric acid HNO_(ac) NO_(ac)	Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : :	H_S(a(a) + H_O(1) → 1: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula intro acid i+NO_(aci) NO_(aci)	$\begin{array}{ c c c c c }\hline monophymod that & HBQad & HC (ag & HC ($	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c }\hline reproduming in the constraint of the constrain$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
						nitric acid HNO_(aci) NO_(aci)		ritric acid HNO_(aq) NO_(aq)	nifric acid HNO,(aq) NO, (aq)	Acid Name Acid Formula Conjugate Base Formula : : : : : : : : : : : : : : : : : : : : : : : : : : : : :	H_S(aq) + H_Q(t) → Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula intro acid HMC (acid NOC (acid NOC (acid)))	$\begin{array}{ c c c c c }\hline monophymod that & HBQad & HC (ag & HC ($	$\begin{array}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $	$\begin{array}{ c c c c c c }\hline reproduming in the constraint of the constrain$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
i i bromothymol blue HBb(aq) Bb'(aq)	bromothymol blue HBb(aq) Bb(aq)				nitric acid HNO,(aq) NO, (aq)					Acid Name Acid Formula Conjugate Base Formula	H_S(ag) + H_Q(t) → Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:constraints} \begin{array}{ c c c c } \hline HB(a) & HC(a) $	$\begin{array}{ c c c c c c }\hline transformation & H_{1}O(tag) & H_{1}O($	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
i i bromothymol blue HBb(aq) Bb'(aq)	i i bromothymol blue HBb(aq) Bb'(aq)		nyaronium ion H ₂ O (aq) H ₂ O(i)	Hito aud Hito (ad) Hoo (ad)	officiant UNO (an) NO (an)					Acid Name Acid Formula Conjugate Base Formula	H_5(sq) + H_Q(l) → Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula : :	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:constraints} \begin{array}{ c c c c } \hline HB(a) & HC(a) $	$\begin{array}{ c c c c c c }\hline \hline hydronlum lon & H_0^{O(a)} & H_0^{O$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
bromothymol blue HBb(aq) Bb'(aq)	bromothymol blue HBb(aq) Bb'(aq)	hydronium (on H _i O'(aq) H _i O(I)	hydronium ion H ₂ O*(aq) H ₂ O(i)	nitric acid HNO _g (aq) NO _g (aq)						Acid Name Acid Formula Conjugate Base Formula	H ₂ S(sq) + H ₂ O() → tentfy the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:response} \begin{array}{ c c c c } \hline HB(a) & B(r)(a) & B$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:response} \begin{array}{ c c c c c c c c c c c c c c c c c c c$
i i bromothymol blue HBb(aq) Bb'(aq)	i i bromothymol blue HBb(aq) Bb(aq)	hydronium ion H,O'(aq) H,O(t)	hydronium ion H ₂ O*(aq) H ₂ O(i)	nitric acid HNO _g (aq) NO _g (aq)						Acid Name Acid Formula Conjugata Base Formula	so(aq) + H_O(I) → fry the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:response} \begin{array}{ c c c c } \hline HBC(acc & BC(acc & B$	$\begin{array}{ c c c c c }\hline \hline rydronium ion & H_0^{(0)} & H_0^{($	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
$\label{eq:results} \begin{array}{c} \operatorname{Arid}\operatorname{Formals}\ column and the stronger bases appear lower in the Conjugate Base Formals column.\\ The acid is H_S(a_0) because it appears higher in the column than H_O()). The base is H_O().\\ step 3: Write the reactuants side of the chemical equation.\\ H_S(a_0) + H_O(0) \rightarrow \\ step 4: Identify the conjugate forms of the acid and the base.\\ \hline \begin{array}{c c c c c c c c c c c c c c c c c c c $	Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is H_5(aq) because it appears higher in the column than H_O(). The base is H_O(). step 3: Write the reactants side of the chemical equation. H_5(aq) + H_O(t) \rightarrow step 4: Identify the conjugate forms of the acid and the base. Acid Mame Acid Mame Acid Formula Conjugate Base Formula in the column in the Acid Formula in the column in the Acid Formula in the column in the Acid Particle in the column in the particle in the column in the Acid Particle in the column in the Acid Particle in the column in the column in the Acid Parti	kcid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is H ₂ S(aq) because if appears higher in the column than H ₂ O(t). The base is H ₂ O(t). Write the reactants wide of the chemical equation. H ₂ S(aq) + H ₂ O(t) \rightarrow lentify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Hame Acid Conjugate Base Formula if the acid is H ₂ O(a) if the conjugate Base Formula	$\label{eq:commanded} \begin{array}{ c c c c c c c c c c c c c c c c c c c$	and a column and the stronger bases appear lower in the Conjugate Base Formula column. id is H_S(aq) because it appears higher in the column than H_O(1). The base is H_O(1). reactumts side of the chemical equation. $0 + H_O(1) \rightarrow$ the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	a column and the stronger bases appear lower in the Conjugate Base Formula column. is H_5(aq) because it appears higher in the column than H_O(1). The base is H_O(1), ctants side of the chemical equation. H_O(1) \rightarrow onjugate forms of the acid and the base. TABLE OF ACIDS AND BASES	id Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is $H_{2}(s(a))$ because is appears higher in the column than $H_{2}(0)$. The base is $H_{2}(0())$.	kcid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is $H_2(a_0)$ because it appears higher in the column than $H_2(0)$. The base is $H_2(0)$. Write the reactants side of the chemical equation. $H_2(Sa_0) + H_2(0) \rightarrow J$ lentify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES	formula column and the stronger bases appear lower in the Conjugate Base Formula column. acid is H_5(sq) because it appears higher in the column than H_O(1). The base is H_JO(1). he restrumts iside of the chemical equation. $(a_0) + H_O(1) \rightarrow$ y the conjugate forms of the acid and the base.	Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is H ₂ S(a) because it appears higher in the column than H ₂ O(1). The base is H ₂ O(1). : Write the restcatust side of the chemical equation. H ₂ S(aq) + H ₂ O(1) \rightarrow	Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column.		bromothymol blave HB2(ad) BD (ad) nydrozatlanic aod H45(ad) H5 (ad) primotipitatien HP1ra(a) P11 (ad) :: : : hydrogen actionate ion HOC) (ad) CC0 [*] (ad)	bromothymol blue Hillic(ad) BD (ad) hydrosultutic add Hi <mark>j</mark> ßing Hillic(ad) phenophtalem HiPR(ad) Ph (ad) hydrogen cabonate (on HiOC, (ad) CO, [*] (ad)	hydronhum lon H,O'(ag) H,O'(ag) bromothymot blue HB2(ag) Bb'(ag) hydrosufturio acid H,B(ag) HS (ag) prenorphtalem HP1(ag) HS (ag) tim tim tim tim tim tim tim tim tim tim tim tim	mite acid HNO,lizg) NO,lizg) hydronium ion H,O'lizg) H,O'lizg) tromothymol blue HBR(arg) BB (arg) hydroniutrik acid H,Briegi HS (arg) phenolphthalein H-Priczg Ph (arg) in in in in in HO(c) (arg) CO,' (arg)
$\label{eq:product} \begin{array}{c} \text{identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger base appear lower in the Conjugate Base Formula column. The acid is H_S(aq) because it appears higher in the column than H_O(1). The base is H_O(1). \\ \text{if the the reactants side of the chemical equation.} \\ H_S(aq) + H_O(0) \rightarrow \\ \text{step 4: Identify the conjugate forms of the acid and the base.} \\ \hline \textbf{TAELE OF ACIDS AND BASES} \\ \hline \hline \begin{array}{c c c c c c c c c c c c c c c c c c c $	step 2: Identify the scid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is H ₂ S(cq) because it appears higher in the column than H ₂ O(1). The base is H ₂ O(1). step 3: White the reactants side of the chemical equation. $H_2(s(q) + H_2O(1) \rightarrow H_2$	$\label{eq:entropy} \begin{array}{ c c c c c c c c c c c c c c c c c c c$	y the scid and the base in the reaction. Recall that the stronger acids appear higher in the formula column and the stronger bases appear lower in the Conjugate Base Formula column. acid is H ₂ (Sog) because it appears higher in the column than H ₂ O(1). The base is H ₂ O(1), the reactuant side of the chemical equation. (s(a) + H ₂ O(1) → y the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula HOC ₂ (ac) NO ₂ (ac) NO ₂ (ac)	The scid and the base in the reaction. Recall that the stronger acids appear higher in the mula column and the stronger bases appear lower in the Conjugate Base Formula column. Id is $H_1^{(0)}(t)$. The base is $H_2^{(0)}(t)$, reactants side of the chemical equation. $0 + H_2(0) \rightarrow 0 + H_2(0) \rightarrow 0$ the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	icid and the base in the reaction. Recall that the stronger acids appear higher in the a column and the stronger bases appear lower in the Conjugate Base Formula column. Is $H_2S(a_0)$ because it appears higher in the column than $H_2O(1)$. The base is $H_2O(1)$. ctants side of the chemical equation. $H_2O(0) \rightarrow 0$ onjugate forms of the acid and the base. TABLE OF ACIDS AND BASES	unify the acid and the base in the reaction. Recall that the stronger acids appear higher in the id Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is $H_{ij}(\alpha_{ij})$ because it appears higher in the column than $H_{ij}(0)$. The base is $H_{ij}(0)$, its the reactuants side of the chemical equation. $H_{ij}(\alpha_{ij}) + H_{ij}(\alpha_{ij}) + H_{ij}(\alpha$	learnify the acid and the base in the reaction. Recall that the stronger acids appear higher in the kcid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is $H_s(o_0)$ because it appears higher in the column than $H_s(O_1)$. The base is $H_s(O_1)$. Write the reactants side of the chemical equation. $H_s(S_{O_1}) + H_s(S_{O_1}) + H_s(O_{O_1}) \rightarrow J$ alentify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES	y the acid and the base in the reaction. Recall that the stronger acids appear higher in the ormula column and the stronger bases appear lower in the Conjugate Base Formula column. acid is $H_{c}(S(a))$ because a appears higher in the column than $H_{c}(O()$. The base is $H_{c}(O())$. The base is $H_{c}(O())$ for exact starts side of the chemical equation. (ag) $+H_{c}(O)$ - ψ the conjugate forms of the acid and the base.	I dentify the social and the base in the reaction. Recall that the stronger social appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is $H_1S(a_0)$ because it appears higher in the column than $H_1O(1)$. The base is $H_nO(1)$. Write the reactuant side of the chemical equation. $H_2S(a_0) + H_2O(0) \rightarrow$	 Identify the acid and the base in the resortion. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. 	water (55.5 mol/L) HjO(t) OH (aq)	bromothymol blue HBb(ad) Bb (ad) hydroxuffurfa add H,Stea) HS (ad) phenophthallen HPr(ad) Ph (ad)	bromotrymol blue HBz(ad) Bbr (ad) hydroxullute and H <u>B</u> leg HS (ad) phenophthalen HPtag Ph(pg)	hydronium ion H_O ⁽² (ac) H_O(8) :: : : : bromothymol blue HB2(ac) BD (ac) BD (ac) hydroxullurtic acid H_S(ac) BD (ac) HS (ac) phenoiphthalen HP3(ac) PH (ac) PH (ac)	nthe add HANO,faig NO, faig hydroniumion H ₁ Or (ad) H ₂ O(g) : bromothynol blue HBE(ad) BD (ad) hydrosulthic add H ₂ Siging HS (ad) phenolythialein HPI(ad) Ph (ad) ;
water (55.5 mold.) H_(0) OF (acj) step 2: Identify the scid and the bars in the reaction. Recall that the stronger acids appear layer in the Acid Formula column and the stronger bars appear lower in the Conjugate Base Formula column. The acid sH (54(a) because it appears higher in the column than H_(0(1)). The base is H_(0(1)). step 3: Write the reactuant side of the chemical equation. $H_{5}(aq) + H_{2}(0) \rightarrow$ step 4: Identify the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Nume Acid Formula Conjugate Base Formula if the acid HNO_(BC) HO(1) ignorphic the conjugate forms of the acid and the base. Image: Hood Hood Hood Hood Hood Hood Hood Hoo	$\label{eq:response} \hline \begin{array}{ c c c c } \hline H (Q) & Of (ac) \\ \hline H (Q) & Of (ac) \\ \hline H (Q) & Of (ac) \\ \hline Step 2: Identify the scid and the base in the reaction. Recall that the stronger acids appear layler in the Acid Formula column. The acid is IE_{3}(a_{0}) because it appears higher in the column than H_{0}(i). The base is H_{0}(i), \\ \hline Step 3: Write the reactants side of the chemical equation. \\ H_{2}(a_{0}) + H_{0}(i) \rightarrow \\ \hline Step 4: Identify the conjugate forms of the acid and the base. \\ \hline \begin{array}{c c c c c c c c } \hline Acid Homo & Conjugate Base Formula \\ \hline I (I) (I) (I) (I) (I) (I) (I) (I) (I) ($	water (56.5 mol.) H_(0) OH (pc) Benify the acid and the base in the reaction. Recall that the stronger acids appear higher in the cid formutal column and the stronger bases appear lower in the Conjunct Base Formutal column. The acid is H_S(aq) because it appears higher in the column than H_O(1). The base is H_O(1). The acid is H_S(aq) because it appears higher in the column than H_O(1). The base is H_O(1). The acid is H_S(aq) because it appears higher in the column than H_O(1). The base is H_O(1). Jint the acid is H_S(aq) because it appears higher in the column than H_O(1). The base is H_O(1). Jint the acid is H_S(aq) because it appears higher in the column than H_O(1). The base is H_O(1). The base is H_O(1). Jint the acid is H_S(aq) because it appears higher in the column than H_O(1). The base is H_O(1). Jint the acid is H_S(aq) because it appears higher in the column than H_O(1). The base is H_O(1). Jint the acid is the acid and the base. The base is H_O(1). Acid Name Acid Formula Conjugate Base Formula Intrin acid HNO(100) NO(100)	water (85.5 mork.) H_Q00 OF (pag) y the scid and the bars in the reaction. Recall that the stronger acids appear higher in the formula column and the stronger scale spapear lower in the Conjugate Base Formula column and the stronger stress spapear lower in the Column than H_Q0(). The base is H_Q0(). e acid is H_S(sq) because it appears higher in the column than H_Q0(). The base is H_Q0(). the reactions side of the chemical equation. s(sq) + H_Q0() \rightarrow y the conjugate Base forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formata intra acid HNO_(acj) NO_(acj)	water (85.5 most.) 44,00% OF (au) the scid and the basic in the reaction. Recall that the stronger acids appear higher in the mula column and the stronger basic appear lower in the Conjugate Base Formula column and the field because it appears higher in the column than H ₁ O(1). The base is H ₂ O(0). reactants side of the chemical equation. $\mu + H_2O(1) \rightarrow$ the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	$\begin{array}{c c} \label{eq:response} \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	water (55.5 molt.) H, Q0] OF (aq) infly the sci d and the base in the reaction. Recall that the stronger acids appear higher in the d formula column and the stronger base spaces lower in the Conjugate Base Formula column. The acid is $H_1S(q_0)$ because it appears higher in the column than $H_2O(1)$. The base is $H_2O(0)$. it the breactants side of the chemical equation. $H_2S(q_0) + H_2O(0) \rightarrow$ mify the conjugate forms of the acid and the base.	water (56.5 mod.) H_(0)) Or(pag) Benify the scid and the base in the reaction. Recall that the stronger acids appear higher in the (id formula cloumm and the stronger bases appear lower in the Conjunct Base Formula cloum. The acid is H_S(aq) because it appears higher in the column than H_O(1). The base is H_O(1). When the cloum is the cloum cloum that H_O(1) are base in H_O(1). The mextants side of the chemical equation. H_S(aq) + H_O(1) \rightarrow Hendy the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES	water (5.5 mol.) H_(0) OF (ac) y the acid and the base in the reaction. Recall that the stronger scales appears higher in the ornumal column and the stronger brease spear lower in the Colugates Bases Formula column and the stronger breases appears higher in the column. acid is H_5(ac) because it appears higher in the column than H_0(1). The base is H_0(1). acid is H_5(ac) because it appears higher in the column than H_0(1). The base is H_0(1). be reactual with the column than H_0(1). be reactual (ac) + H_0(1) - > y the conjugate forms of the acid and the base.	water (55.5 mold.) H ₁ O(f) CHF (ac) : Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Colyingate Base Formula column. The acid is $H_{s}S(a_{0})$ because it appears higher in the column than $H_{s}O(i)$. The base is $H_{s}O(i)$. : White the reactants side of the chemical equation. $H_{s}S(a_{0}) + H_{s}O(i) \rightarrow$	water (55.5 mol.) H_O(0) OH (ac) 2: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column.		bromothymol blue HBb(aq) Bb'(aq) hydrosulfuric acid H,5(aq) HS (aq)	bromothymol blue HBb(ad) Bb'(ad) hydrosulturic adid H,5(ad) HS'(ad)	hydronium (on H ₂ O(fag) H ₂ O(f) : : : bromothymol blue HBR/adj BB (adj) hydrosouturia add H_B(adj) H5 (adj)	riffic aud I+N0, Jeg N0, (eg) hydronlum lon H, 0/(teg) H, 0(t) i i i bromothymol blue HBD(ad) BD (ad) hydronlum lon H, 0(teg) BD (ad)
$\label{eq:controls} \begin{array}{ c c c c } \hline +4clogg & 1c(pg) \\ \hline +4clog & 0c(pg) \\ \hline +4clog &$	$\label{eq:controls} \begin{array}{ c c c c } \hline +4clogg & 1c(pg) \\ \hline +4clog & 0c(pg) \\ \hline +4clog &$	$\begin{array}{ c c c c } \hline \label{eq:control} & \frac{1}{16}(c_{BQ}) & \frac{1}{16}(c_{BQ}) \\ \hline \mbox{matr} (65.5 \mbox{mol},) & H_{1}(00) & OH([a_{B}]) \\ \hline \mbox{matr} (65.5 \mbox{mol},) & H_{2}(00) & OH([a_{B}]) \\ \hline \mbox{matr} (56.5 \mbox{mol},) & H_{2}(00) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(00) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_{2}(a_{B}]) & OH([a_{B}]) & OH([a_{B}]) & OH([a_{B}]) \\ \hline \\mbox{matr} (56.0) & H_$	Indep carmine HC(pq) Ic pq) wate (65.5 mol.) H(Of) OH (pq) y the acid and the base in the reaction. Recall that the stronger acids appear higher in the formula column must be stronger base appear lower in the Conjugate Base Formula column. acid H K5(aq) because it appears higher in the Column than H_O(1). The base is H_O(1). the reactants side of the chemical equation. $(q_0) + H_O(1) \rightarrow$ y the conjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula HO()aq) NO(pq)	Indigo camme $i d_{D(0)}$ $i c_{D(0)}$ wate (55.5 mott). $H_i O(0)$ OH (max) se acid and the base in the reaction. Recall that the stronger acids appear higher in the conjugate Base Formula column and the stronger base in the Conjugate Base Formula column. aid s H_S(s(a) because it appears higher in the column than H_O(0). The base is H_O(0). teaction is do the choice lequation. $0 + H_i O(0) \rightarrow$ teaconjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:constraints} \begin{array}{c c c c c } H_{0}^{1}(c) & I_{0}^{1}(c) \\ I_{0}^{1}(c) & O^{1}(c) \\ I$	$\begin{array}{ c c c c } \mbox{ind} & \mbox{if} (Sc.5 \mbox{mod}) & $	$\begin{array}{ c c c c } traje common & tdcpap & L^{c}(pa) \\ water (65.5 mol.) & M_{i}(OB) & OH^{c}(pa) \\ \hline \\ \end{tabular}$ the social and the base in the reactions. Recall that the stronger acids appear higher in the formula column must the stronger bases appear lower in the Conjugate Base Formula column. acids its $R_{i}(Sa)$ because it appears higher in the column than $H_{i}O(0)$. The base is $H_{i}O(0)$. The reactants side of the chemical equation. (a) $H_{i}O(0) \rightarrow J$ y the conjugate forms of the acid and the base.	$\label{eq:constraint} \begin{array}{ c c c c } \mbox{id} p & i$	indge carmine id[pa] Ir (pa) water (65.5 most) H(OB) OH (pa) 2: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the toronger bases appear lower in the Coajugate Base Formula column.	Indigo carmine HIc(aq) Icr(aq)	bromothymol blue HBb(aq) Bb'(aq) hydrosulturlo acid H,S(aq) HS'(aq)	bromothymol blue HBb(adg Bb' (ad) hydrosulfuric add H,§(adg HS' (ad)	hydronium lon H_O ⁰ (aq) H_O(t) : : : bromothymol blue HB(clq) BB' (aq) hydroxullurio acid H_S(taq) HS (aq)	пthe add HNO_(Reg NO_1stg) tydronium lon H ₁ O [*] (Reg H ₁ O(R)) t t
$\label{eq:production} \begin{array}{ c c c c } & 4d_{0}(a) & 1c_{1}(a) \\ \hline water (65.5 mod.) & 4d_{0}(b) & 0d_{1}(a) \\ \hline ddel{eq:production} & 4d_{0}(a) & 0d_{1}(a) \\ \hline ddel{eq:production} & 4d_{0}(a) & 0d_{1}(a) \\ \hline ddel{eq:production} & 4d_{0}(a) & 0d_{1}(a) \\ \hline ddel{eq:production} & 2d_{1}(a) & 0d_{1}(a) \\ \hline ddel{eq:product$	$\label{eq:production} \begin{array}{ c c c c } & Icpa & Icpa \\ \hline water (65.6 mod.) & H_{0}(00) & OH (aa) \\ OH (aa) & OH (aa) \\ \hline OH (aa) & OH $	$\begin{array}{ c c c c } \mbox{Image} & $	$\label{eq:rescaled} \begin{array}{ c c c } \hline Hold (a) & F(a) $	Indigo camme $i d_{D(0)}$ $i c_{D(0)}$ wate (55.5 mott). $H_i O(0)$ OH (max) se acid and the base in the reaction. Recall that the stronger acids appear higher in the conjugate Base Formula column and the stronger base in the Conjugate Base Formula column. aid s H_S(s(a) because it appears higher in the column than H_O(0). The base is H_O(0). teaction is do the choice lequation. $0 + H_i O(0) \rightarrow$ teaconjugate forms of the acid and the base. TABLE OF ACIDS AND BASES Acid Name Acid Formula Conjugate Base Formula	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:constraints} \begin{array}{c c c c c } H_{0}^{1}(c) & I_{0}^{1}(c) \\ I_{0}^{1}(c) & O^{1}(c) \\ I$	$\begin{array}{ c c c c } \mbox{ind} & \mbox{if} (SLS mod.) & \mbox{if} (SLS mo$	$\begin{array}{ c c c c } traje common & tdcpap & L^{c}(pa) \\ water (65.5 mol.) & M_{i}(OB) & OH^{c}(pa) \\ \hline \\ \end{tabular}$ the social and the base in the reactions. Recall that the stronger acids appear higher in the formula column must the stronger bases appear lower in the Conjugate Base Formula column. acids its $R_{i}(Sa)$ because it appears higher in the column than $H_{i}O(0)$. The base is $H_{i}O(0)$. The reactants side of the chemical equation. (a) $H_{i}O(0) \rightarrow J$ y the conjugate forms of the acid and the base.	$\label{eq:constraint} \begin{array}{ c c c c } \mbox{id} p & i$	indgo carmine id2pag Ic (pag) water (85.5 mott) H_OB OH (pag) 2: Identify the acid and the base in the reaction. Recall that the stronger acids appear higher in the Acid Formula column and the stronger bases appear lower in the Conjugate Base Formula column.	Indigo carmine HIc(aq) Ic (aq)	bromothymol blue HBb(ad) Bb'(ad) hydrosullurio acid H_S(ad) HS (ad)	bromothymol blue HBb(ad) Bb'(ad) hydrosulfurficiald HB(adg H5 (ad)	hydronium lon H,O'(aq) H,O() : : : bromothymot blue HBb(aq) BD (aq) hydroxulturlo add H,Sigligi HS (aq)	rtfts acid H-NO (ac) NO (ac) Hydronium Ion H-O'(lac) H-O(lac) : : : tromothymori blue HBC(ac) BD (ac) hydroxillute acid HBC(ac) BD (ac)
$\label{eq:constraints} \begin{array}{ c c c c } \hline HO_{0}(aq) & O_{0}^{+}aq) \\ \hline Holgo carriere & HO_{0}(aq) & Cr(aq) \\ \hline Holgo carriere & Holgo & Cr(aq) \\ \hline Holgo carriere & Holgo & Cr(aq) \\ \hline Holgo carriere & Holgo & Cr(aq) \\ \hline Holgo & Holgo \\ \hline \hline Holgo & Holgo \\ \hline Holgo & Holgo \\ \hline \hline \hline \hline Holgo & Holgo \\ \hline \hline \hline \hline Holgo & Holgo \\ \hline \hline \hline \hline \hline Holgo & Holgo \\ \hline $	$\label{eq:constraints} \begin{array}{ c c c c } \hline HO(_{1}(a_{1}) & O_{2}^{+}(a_{2}) \\ \hline HO(_{2}^{+}(a_{2}) & L^{+}(a_{2}) \\ \hline HO(_{2}^{+}(a_{2}) & L^{+}(a_{$	$\begin{array}{ c c c c } \hline \begin{tabular}{ c c c } \hline \begin{tabular}{ c c c } & CO_{0}^{+}[ab] & [c(a)] & [c(a)$	hydrogen cardionals ion indigo carmine HOQ. [kg] HdQag CQ * [kg] E (kg] C (kg) HdQag water (6.5 mort.) HQ00 Cr (kg) HQ00 y de acid and the base in the resection. Recall that the stronger base formula columan date acid is H_5 (sq) because it appears higher in the Conjungte Base Formula columa. (sq) + HQO-) y de acid and the base in the section base syster's lower in the Conjungte Base Formula column. (sq) + HQO-) y de conjugate Base forms of the acid and the base. SELE OF ACIDS AND BASES Acid Name Acid Formula HNO([aq] HO([aq] NO ([aq]	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	rysrogen cartonate ion indigo carmine wate (65.6 mort.) HOQ(ind) HOQ0 HOQ0 HOQ0 HOQ0 HOQ0 HOQ0 HOQ0 HOQ0	hydrogen carbonate ion HCO ₂ (aq) CO ₂ ⁺ (aq) indigo carmine H2(qaq) Er (aq)	bromothymol blue HBb(aq) Bb'(aq)	bromothymotiblue HBb(ac) Bb'(ac)	hydronium ion H ₂ O(aq) H ₂ O(b) : : : bromothymol blue HBb(ad) Bb'(ad)	nitre acid HNO,(acj) NO, (acj) hydronium (on H,O'(acj) H,O(t) : : : : bromothymol blue HEb(acj) BD'(acj) BD'(acj)
$\label{eq:production} \begin{array}{ c c c c } \hline P(r)ag & P(r)ag \\ \hline P(r)ag catomic of the set of $	$\label{eq:production} \begin{array}{ c c c c } \hline P(r)ag & P(r)ag \\ \hline P(r)ag & P(r)ag \\ \hline P(r)ag catomic & HOO_r(ag) & CO_r^{+}(ag) \\ \hline P(r)ag carmine & HOO_r(ag) & CO_r^{+}(ag) \\ \hline P(r)ag carmine & HOO_r(ag) & P(r)ag \\ \hline P(r)ag carmine & P(r)ag \\ \hline P(r)ag \\ \hline P(r)ag carmine & P(r)ag \\ \hline $	$\begin{array}{ c c c c } \hline prenoptituden & HP (tag) & Pr (tag) \\ \hline prenoptituden catornate ion & HOQ, (tag) & OQ^{+}_{1}(tag) \\ \hline rindgo carrier & HoQ(a) & DC^{+}_{1}(tag) & DC^{+}_{1}(tag) \\ \hline water (65.5 moll.) & HQ(0) & Cor(tag) \\ \hline restrict the cold and the base in the restriction. Recall that the ctronger scale appear higher in the circle Arran and the stronger bases appears higher in the Conjugate Base Formula column. The acid is H_{2}(sq) because it appears higher in the column than H_Q(0). The base is H_Q(0), trite the restrants side of the chemical equation. \\ H_{2}(tag) + H_Q(0) \rightarrow \\ \hline entity the conjugate Bons of the acid and the base. \\ \hline \hline \textbf{Table Of ACIDS AND BASES} \\ \hline \hline \textbf{Acid Name} & Acid Formula & Ornjugate Base Formula \\ \hline rift c acid & HAQ/get & NQ'_{1}(tag) \\ \hline \end{array}$	$\begin{tabular}{ c c c c } \hline HPr(ag) & Pr(ag) \\ Pr(ag) & O_{1}^{*}(ag) \\ regon catronals ion & HO_{1}(ag) & O_{1}^{*}(ag) \\ regon catronals ion & HO_{2}(ag) & F(ag) \\ wate (ids. botk) & R(b0) & C(ag) \\ wate (ids. botk) & R(b0) & C(ag) \\ Pr(ag) & C(ag) & C(ag) \\ regon & R(b) & R(b) \\ regon & R$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c} \text{Principle Principle} \\ \hline Principle Princi$	$\begin{array}{ c c c c c } \hline prenoptifulem & HPReal & Pr (aq) \\ \hline hydrogen castonales lon & HCOs_{1}(aq) & COs_{1}^{-1}(aq) \\ \hline hydrogen castonales lon & HCOs_{1}(aq) & COs_{1}^{-1}(aq) \\ \hline hydrogen castonales lon & HCOs_{1}(aq) & COs_{1}^{-1}(aq) \\ \hline hydrogen castonales lon & HCOs_{1}(aq) & HCOs_{1}(aq) \\ \hline hydrogen castonales lon & HCOs_{1}(aq) & HCOs_{1}(aq) \\ \hline hydrogen castonales lon & HCOs_{1}(aq) & HCOs_{1}(aq) \\ \hline hydrogen castonales lon & HCOS_{1}(aq) $	$\begin{array}{ c c c c c } \hline principithatem & HPTetag & Pripag \\ \hline principithatem & HPCag & Pripag \\ \hline price & Pripag & Pripag \\ \hline price & Pripag & Pripag \\ \hline pripag & Pripag & Pripag \\ \hline pripag & Pripag & Pripag & Pripag \\ \hline pripag & Pripag & Pripag & Pripag & Pripag & Pripag \\ \hline pripag & P$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{ c c c c } \hline prenoprimier & H^{DP}(ac) & Pr(ac) \\ \hline prenoprimer (actionate ion & HOO_{c}(ac) & CO_{c}^{0}(ad) \\ \hline redge carmine & HOO_{c}(ac) & CO_{c}^{0}(ad) \\ \hline redge carmine & HOO_{c}(bc) & Och(ac) \\ \hline water (65.5 mol.L) & H_{0}(0) & Och(ac) \\ \hline entity the acid and the base in the reaction. Recall that the stronger acids appear higher in the cid Formula column and the stronger bases appear lower in the Conjugate Base Formula column. The acid is H_{0}(a_{c}) because it appears higher in the column than H_{v}O(t). The base is H_{0}(t). The time the reactions lise of the chemical equation. \\ H_{c}S(a_{c}) + H_{v}O(t) \rightarrow \end{array}$	prenoprimatein HEPQad; Priced hydrogen cartonate ion HOO, (ad) OO, [*] (ad) indigo carmine HEOpa) Ic (ad) water (55.5 mol.1). H(O) entify the acid and the base in the reaction. Recall that the stronger acids open higher in the cid Formula column and the stronger bases appear lower in the Conjugate Base Formula column.	prenophtulein HPR(ad) Ph (ad) invidiog carmine HOO, (ad) OO, ² (ad) invidio carmine HEqual E (ad)			hydronium lon H _i O'(aq) <u>H</u> iO(()	nibric adid HNO(arq) NO(aq) hydronium ion HjO'(aq) HjO()
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	hydroxuluric axid phenophthalein hydrogen carbonate ion indgo carmine water (65.6 molt.) for the reaction. Recall that the stronger acids appear higher in the Formula colume and the stronger backs appear higher in the Formula colume and the stronger backs appear higher in the	hydrosulfurb add H3[kg] H3[kg] phenophthalein HPh(ad) Ph (ad) hydrogen catronate ion H-Oc (ad) CO_k^* (ad) indigo cartine H2(bq) Zc (ad)			hydronium ion H ₂ O'(aq) H ₂ O(I)	nitric acid HNO,[aq] NO,[aq] hydronium ion H_O'(aq) H_O(t)
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	eq:production and the strength of the set of t	$\begin{array}{ c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\label{eq:constraints} \begin{array}{ c c c c c } \hline HS(max) & HS(m$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\label{eq:constraints} \begin{array}{ c c c c c } \hline \end{tabular} & \end$	Hydrox/flute H, Sigg H Sing prenophhaiei HPReg Pripag hydrogen carbonale ion HCO ₁ (ac) CO ₂ ⁺ (ac) hogo carmine HGOgi Er (ac) water (65.6 mold) HOO Cr (ac) off the base in the rescition. Recall that the stronger acids argeen ligher in the difference in the Conjugate Base Formula column.	hydroxulturic axid H/B(big) H-S (big) phenophhalein HPR(big) Ph (big) hydrogen cationale ion H-Oc (big) Co (big) indgo carmine +LO(big) Zr (big)		hydronium ion H ₂ O*(aq) H ₂ O(t)		nitric acid HNO,(aq) NO, (aq)

Science 30 - Lesson 16 - Chemistry of Acids and Bases

Name: _____

1) Identify whether each example affects the validity or reliability of scientific work.

- a) Repeating an experiment
- b) Comparing your data with the data collected by other students completing the same experiment
- c) Two groups of scientists arriving at the same result using different methods

2) Write a balanced equation for the change that occurred with each substance when it was dissolved in water. Identify is it's an Arrhenius acid, base or neutral

- 3) Write the chemical equation for the following reactions. Label the acid, the base, the conjugate acid, and the conjugate base in each reaction.
 - a) Dissolved nitric acid, $HNO_{3(aq)}$, reacts with water, $H_2O_{(1)}$.
 - b) Carbonic acid in rainwater reacts with water.
 - c) Ethanoic acid and ammonia

4) List similarities and differences between Arrhenius's theory and the Brønsted-Lowry theory.

5) Compare and contrast the terms proton, hydrogen ion, and hydronium ion.

- 6) Antacids are usually taken to relieve heartburn. State the type of compound an antacid needs to be in order to be effective. Calcium carbonate, CaCO3(s), and aluminium hydroxide, Al(OH)3(s), are substances used in commercially available antacids. List the empirical properties common to these two antacids. Write a balanced chemical equation that represents the reaction between each of these antacids and aqueous hydronium ions that would occur in the stomach.
- 7) A chemical spill releases concentrated ammonia, NH3(aq), along a dangerous-goods route. The spill has been contained. Identify the general properties of the concentrated ammonia spill. If a decision is made to treat the spill to reduce the risk to people or the environment, indicate a substance that can be used. Support your answer with a balanced chemical equation.

8) "The total amount of acid being deposited in an area is equal to the amount of wet acidic deposition deposited in the area plus the amount of dry acidic deposition deposited in the area." Use the concepts you applied in this lesson to explain whether you think this statement is correct or incorrect.