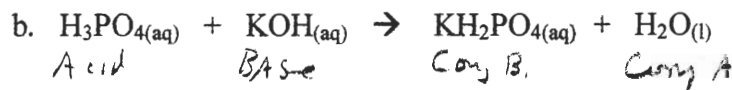
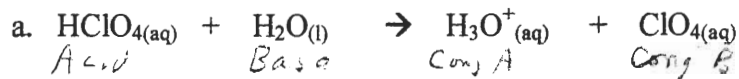


1. (4 Pts) Label the acid, base, conjugate acid and conjugate base in each of the following.



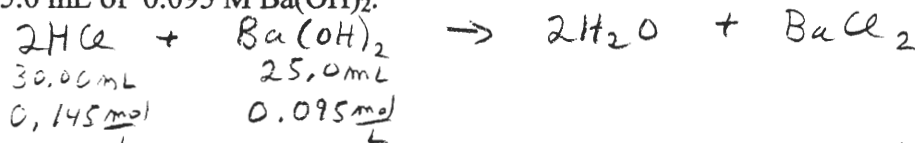
2. (4 Pts) Circle all of the Strong acids below.



3. (6 Pts) Complete the following table:

Acid or base	pH	pOH	[OH ⁻]	[H ₃ O ⁺]
0.025 M HCl	1.60	12.40	3.98×10^{-13}	0.025
0.0050 M Ba(OH) ₂	12.00	2.00	0.010	1.0×10^{-12}
Strong acid	2.45	11.55	2.82×10^{-12}	3.55×10^{-3}

4. (6 Pts) Determine the pH and the pOH of the solution that results in the reaction of 30.0 mL of 0.145 M HCl with 25.0 mL of 0.095 M Ba(OH)₂.

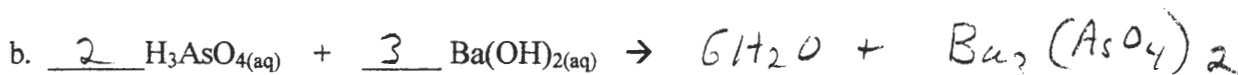


moles H⁺: $\frac{30.0 \text{ mL}}{1000 \text{ mL}} \times 0.145 \text{ mol/L} \times 1 \text{ H}^+ = 0.00435 \text{ mol H}^+$

moles OH⁻: $\frac{25.0 \text{ mL}}{1000 \text{ mL}} \times 0.095 \text{ mol/L} \times 2 \text{ OH}^- = 0.00475 \text{ mol OH}^- \leftarrow \text{XS Reactant}$

[OH⁻]_{XS}: $\frac{(0.00475 - 0.00435) \text{ mol OH}^-}{55.0 \times 10^{-3} \text{ L}} = 0.00727$ pOH = 2.14 pH = 11.96

5. (4 Pts) Complete and balance each of the following reactions (assume complete neutralization).



6. (1 Pt) Supply a definition of an acid.