

CONCEPT: BASES

Strong Bases

- When certain Group _____ and _____ metals combine with any of the following anions they form **Strong Bases**.
 - The anions include: _____ (hydroxide), _____ (hydride), _____ (amide), and _____ (oxide).

Strong Bases			
Periodic Table 	Hydroxides		Hydride
	_____ + $\text{OH}^- \rightarrow$ _____		_____ + $\text{H}^- \rightarrow$ _____
	Amide		Oxide
	_____ + $\text{NH}_2^- \rightarrow$ _____		_____ + $\text{O}^{2-} \rightarrow$ _____

EXAMPLE: Which of the following represents a strong base?

- a) $\text{Be}(\text{OH})_2$ b) NaO_2 c) LiNH_2 d) $\text{Mg}(\text{OH})_2$ e) KIO

- Following acids, **Strong Bases** are _____ electrolytes and **Weak Bases** are _____ electrolytes.
 - Strong Bases** dissociate (ionize) _____ in water and are _____ proton acceptors.
 - Weak Bases** only partially dissociate, are _____ proton acceptors, and favor _____.

Strong Base	Weak Base
<p> NaOH Na^+ OH^- </p>	<p> NH_3 NH_4^+ OH^- </p>
<input type="checkbox"/> Dissociates completely <input type="checkbox"/> _____ proton (H^+) acceptors <input type="checkbox"/> Favors product formation	<input type="checkbox"/> Dissociates partially <input type="checkbox"/> _____ proton (H^+) acceptors <input type="checkbox"/> Favors reactant formation

EXAMPLE: Which of the following bases will partially dissolve when placed in water?

- a) LiOH b) NaNH_2 c) $\text{Al}(\text{OH})_3$ d) Cs_2O e) KOH

CONCEPT: BASES

Amines

- Recall, an amine is a covalent compound containing ____ & ____ or ____, ____ & ____.

Amines	
<div>Neutral Amines</div> <div><input type="checkbox"/> Neutral Amines = Weak _____.</div> <div>H_2NNH_2 $\text{C}_3\text{H}_7\text{NH}_2$ $\text{C}_5\text{H}_5\text{N}$</div>	<div>Positive Amines</div> <div><input type="checkbox"/> Positive Amines = Weak _____.</div> <div>CH_3NH_3^+ NH_4^+ $(\text{C}_2\text{H}_5)_3\text{NH}^+$</div>

EXAMPLE: Identify the amine that will weakly accept a proton (H^+) when in the presence of an acid.

- a) H_2NNH_3^+ b) $(\text{CH}_3)_2\text{NH}$ c) CH_3SH d) CH_3NH_3^+ e) $\text{CH}_3\text{CH}_2\text{CH}_3$

PRACTICE: Which of the following bases would more greatly favor the product side of a chemical reaction?

- a) BeH_2 b) H_2Se c) SrH_2 d) $\text{Pb}(\text{OH})_4$ e) HF

PRACTICE: Which of the following compounds would be found as mostly molecules when placed into water?

- I. $\text{Be}(\text{OH})_2$ II. HNO_3 III. LiOH IV. $(\text{CH}_3)_2\text{NH}$ V. CaO

- a) I, IV, V
b) I only
c) I and IV
d) IV only
e) None of the above