

Discussion Quiz #7 take home

Your Name: KEY TF's Name: _____ Discussion Day/Time: _____

1. You have three containers with the following solutions: (i) 0.1 moles of NaNO_3 fully dissolved in 200 mL of water (ii) 0.2 moles of $\text{Ba}(\text{OH})_2$ fully dissolved in 300 mL of water (iii) 0.1 moles of MgSO_4 fully dissolved in 500 mL of water. These three solutions are combined in a large container for a total volume of 1 L.

- a. (2 points) Write the balanced **NET** ionic equation.

$\text{Ba}^{2+}(\text{aq})$ 0.2mol
 $\text{OH}^{-}(\text{aq})$ 0.4mol
 $\text{Mg}^{2+}(\text{aq})$ 0.1mol limiting reagent
 $\text{SO}_4^{2-}(\text{aq})$ 0.1mol limiting reagent
 $\text{Na}^{+}(\text{aq})$ 0.1mol spectator ion
 $\text{NO}_3^{-}(\text{aq})$ 0.1mol spectator ion

	<u>$\text{Ba}^{2+}(\text{aq}) + \text{SO}_4^{2-}(\text{aq}) \rightarrow \text{BaSO}_4(\text{s})$</u>			and	<u>$\text{Mg}^{2+}(\text{aq}) + 2\text{OH}^{-}(\text{aq}) \rightarrow \text{Mg}(\text{OH})_2(\text{s})$</u>		
Initial:	0.2mol	0.1mol			0.1mol	0.4mol	
Change:	-0.1mol	-0.1mol	+0.1mol		-0.1mol	-0.2mol	+0.1mol
End:	0.1mol	0mol	0.1mol		0 mol	0.2mol	0.1mol

- b. (2 points) List all the spectator ions in the reaction.

$\text{Na}^{+}(\text{aq}), \text{NO}_3^{-}(\text{aq})$

- c. (2points) Which Ion(s) is (are) limiting reagent?

$\text{Mg}^{2+}(\text{aq}), \text{SO}_4^{2-}(\text{aq})$

- d. (2 points) Calculate the concentration of $[\text{Na}^{+}]$ in the final solution.

$[\text{Na}^{+}] = 0.1\text{mol}/1\text{L} = 0.1\text{M}$

$[\text{Na}^{+}] = 0.1\text{M}$

- e. (2points) Calculate the number of moles of precipitate.

precipitate = 0.2 mol

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