

ANSWERS TO NET IONIC EQUATIONS PRACTICE PROBLEMS

Easy reactions:

- 1) $\text{Ag}^+(\text{aq}) + \text{Br}^-(\text{aq}) \rightarrow \text{AgBr}(\text{s})$
- 2) no reaction
- 3) $2 \text{Fe}^{3+}(\text{aq}) + 3 \text{CO}_3^{2-}(\text{aq}) \rightarrow \text{Fe}_2(\text{CO}_3)_3(\text{s})$
- 4) $2 \text{OH}^-(\text{aq}) + \text{Co}^{2+}(\text{aq}) \rightarrow \text{Co}(\text{OH})_2(\text{s})$
- 5) $\text{H}^+(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l})$
- 6) $\text{Pb}^{2+}(\text{aq}) + \text{SO}_4^{2-}(\text{aq}) \rightarrow \text{PbSO}_4(\text{s})$
- 7) $\text{S}^{2-}(\text{aq}) + \text{Mn}^{2+}(\text{aq}) \rightarrow \text{MnS}(\text{s})$
- 8) $2 \text{PO}_4^{3-}(\text{aq}) + 3 \text{Cu}^{2+}(\text{aq}) \rightarrow \text{Cu}_3(\text{PO}_4)_2(\text{s})$
- 9) $\text{H}^+(\text{aq}) + \text{C}_2\text{H}_3\text{O}_2^-(\text{aq}) \rightarrow \text{HC}_2\text{H}_3\text{O}_2(\text{aq})$
- 10) no reaction

Harder reactions:

- 1) $\text{HC}_2\text{H}_3\text{O}_2(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{C}_2\text{H}_3\text{O}_2^-(\text{aq}) + \text{H}_2\text{O}(\text{l})$
- 2) $\text{NH}_3(\text{aq}) + \text{H}^+(\text{aq}) \rightarrow \text{NH}_4^+(\text{aq})$
- 3) $2 \text{H}^+(\text{aq}) + \text{Mn}(\text{OH})_2(\text{s}) \rightarrow \text{Mn}^{2+}(\text{aq}) + 2 \text{H}_2\text{O}(\text{l})$
- 4) $3 \text{H}^+(\text{aq}) + \text{AlPO}_4(\text{s}) \rightarrow \text{Al}^{3+}(\text{aq}) + \text{H}_3\text{PO}_4(\text{aq})$
- 5) $2 \text{Ag}^+(\text{aq}) + 2 \text{OH}^-(\text{aq}) \rightarrow \text{Ag}_2\text{O}(\text{s}) + \text{H}_2\text{O}(\text{l})$
- 6) $\text{HClO}(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{ClO}^-(\text{aq}) + \text{H}_2\text{O}(\text{l})$

Still harder reactions:

- 1) $\text{HPO}_4^{2-}(\text{aq}) + \text{H}^+(\text{aq}) \rightarrow \text{H}_2\text{PO}_4^-(\text{aq})$
- 2) $\text{Fe}^{2+}(\text{aq}) + 2 \text{NH}_3(\text{aq}) + 2 \text{H}_2\text{O}(\text{l}) \rightarrow \text{Fe}(\text{OH})_2(\text{s}) + 2 \text{NH}_4^+(\text{aq})$
- 3) $\text{HCO}_3^-(\text{aq}) + \text{H}^+(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g})$
- 4) $\text{CO}_3^{2-}(\text{aq}) + \text{H}^+(\text{aq}) \rightarrow \text{HCO}_3^-(\text{aq})$
- 5) $\text{H}_3\text{PO}_4(\text{aq}) + \text{NH}_3(\text{aq}) \rightarrow \text{H}_2\text{PO}_4^-(\text{aq}) + \text{NH}_4^+(\text{aq})$

Very tricky reactions:

- 1) $2 \text{Ag}^+(\text{aq}) + 2 \text{NH}_3(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{Ag}_2\text{O}(\text{s}) + 2 \text{NH}_4^+(\text{aq})$
- 2) $\text{BaCO}_3(\text{s}) + 2 \text{HC}_2\text{H}_3\text{O}_2(\text{aq}) \rightarrow \text{Ba}^{2+}(\text{aq}) + 2 \text{C}_2\text{H}_3\text{O}_2^-(\text{aq}) + \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g})$
- 3) $\text{Cu}(\text{OH})_2(\text{s}) + \text{H}^+(\text{aq}) + \text{HSO}_4^-(\text{aq}) \rightarrow \text{Cu}^{2+}(\text{aq}) + 2 \text{H}_2\text{O}(\text{l}) + \text{SO}_4^{2-}(\text{aq})$
- 4) $\text{Ag}_2\text{O}(\text{s}) + 2 \text{H}^+(\text{aq}) + 2 \text{Cl}^-(\text{aq}) \rightarrow 2 \text{AgCl}(\text{s}) + \text{H}_2\text{O}(\text{l})$
- 5) Three reactions will occur, one after the other:
 $\text{H}_3\text{PO}_4(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{H}_2\text{PO}_4^-(\text{aq}) + \text{H}_2\text{O}(\text{l})$
 $\text{H}_2\text{PO}_4^-(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{HPO}_4^{2-}(\text{aq}) + \text{H}_2\text{O}(\text{l})$
 $\text{HPO}_4^{2-}(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{PO}_4^{3-}(\text{aq}) + \text{H}_2\text{O}(\text{l})$