General Chemistry

Electrolytic dissociation of major classes of inorganic compounds. Acids and bases. Reactions between salts, bases and acids.

December 10, 2017

Homework

1. Which products will be obtained when the following materials are subjected to electrolysis:

   i. Sodium chloride solution

   ii. NaCl (liquid)

   iii. Aqueous sulfuric acid

   iv. Calcium hydroxide solution

   v. $CuSO_4$ (aqueous solution)

   vi. Aqueous sodium iodide

2. Draw the scheme of dissociation of the following compounds: H_2SO_4, $Ca(OH)_2$, HCl, $AgNO_3$, H_3PO_4, $Al_2(SO_4)_3$.

3. Draw full and short equations of the reactions between

   - $AgNO_3$ and KI

   - NaCl and $CaCl_2$

   - K_2SO_4 and $BaCl_2$

   - HCl and H_2SO_4

   - Na_2CO_3 and H_2SO_4

   - NaOH and HI

4. In the equations shown below the left part is missing. Restore it (including coefficients).

$$.... \longrightarrow Na^+ + {PO_3}^{3-} \tag{1}$$

$$.... \longrightarrow Ca^{2+} + I^- \tag{2}$$

$$.... \longrightarrow H^+ + {SO_3}^{2-} \tag{3}$$

$$.... \longrightarrow Ba^{2+} + OH^- \tag{4}$$

5. In the equations shown below, the symbol 'M' denotes a metal, and the symbol 'X' denotes any atom or a group of atom capable of forming a stable negative ion (anion). Using chemical symbols (for example, Na^+ instead of X^+, or ${SO_4}^{2-}$ instead of X^{2-}), give at least one example of each reaction:

$$MX \longrightarrow M^+ + X^- \tag{5}$$

$$MX \longrightarrow M^{2+} + X^{2-} \tag{6}$$

$$MX_2 \longrightarrow M^{2+} + X^- \tag{7}$$

$$M_2X_3 \longrightarrow M^{3+} + X^{2-} \tag{8}$$

$$M_3X_2 \longrightarrow M^{2+} + X^{3-} \tag{9}$$

   Don't forget to add correct coefficients.

If you have any questions, feel free to ask.
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