May 23, 2019

Answers pg 235 #1-4
Single/Double Replacement Reactions

Test Tuesday Chp 6!!!

Warm-Up

1. Label each of the following reactions:
combustion (C), synthesis (S), or decomposition (D)

a) $2H_2 + O_2 \Rightarrow 2H_2O$ S

b) zinc carbonate $\Rightarrow$ zinc oxide + carbon dioxide D

c) $CH_4 + 2\,O_2 \Rightarrow CO_2 + 2\,H_2O$ C

d) $2CO + O_2 \Rightarrow 2CO_2$ S

e) $C_3H_8 + 5O_2 \Rightarrow 3CO_2 + 4H_2O$ C

f) sodium chloride $\Rightarrow$ sodium + chlorine D

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1. synthesis means to put atoms or molecules together
   example: $H_2 + O_2 \Rightarrow H_2O$

   decomposition means to break molecules apart
   $H_2O \Rightarrow H_2 + O_2$

2. a) synthesis
   b) decomposition
   c) snythesis
   d) decomposition

iron(III) oxide
$Fe^{3+}O^{2-}$

3. a) $Fe + O_2 \rightarrow Fe_2O_3$
   b) $NaI \rightarrow Na + I_2$
   c) $H_2 + O_2 \rightarrow H_2O$
   d) $ZnCO_3 \rightarrow ZnO + CO_2$
   2+ 2- 2+ 2-

4. a) $4Fe + 3O_2 \rightarrow 2Fe_2O_3$
   b) $2NaI \rightarrow 2Na + I_2$
   c) $2H_2 + O_2 \rightarrow 2H_2O$
   d) $ZnCO_3 \rightarrow ZnO + CO_2$

Reactions so far...

Combustion

element/compound + O_2 $\Rightarrow$ oxides + energy

Ex. $C_3H_8 + O_2 \Rightarrow CO_2 + H_2O$ (complete)

$C_3H_8 + O_2 \Rightarrow CO_2 + H_2O + CO + C$ (incomplete)

Synthesis

two smaller particles (elements) $\Rightarrow$ one molecule

Ex. $Zn + O_2$ ZnO

Decomposition

one molecule $\Rightarrow$ smaller particles (elements)

Ex. ZnO Zn + O 2

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Single Replacement Reactions

Single replacement reactions are chemical changes that involve an element and a compound as reactants and an element and a compound as products.

⇒a metal displaces a metal, or a nonmetal displace a nonmetal.

Ex. magnesium + silver nitrate ⇒ silver + magnesium nitrate

$Mg + Ag^{1+}NO_3^{1-} \rightarrow Ag + Mg^{2+}NO_3^{1-}$

$Mg + 2AgNO_3 \rightarrow 2Ag + Mg(NO_3)_2$

Ex. bromine + calcium iodide ⇒ calcium bromide + iodine

$Br_2 + Ca^{2+}I^{1-} \rightarrow Ca^{2+}Br^{1-} + I_2$

$Br_2 + CaI_2 \rightarrow CaBr_2 + I_2$

Double Replacement Reactions

Double replacement reactions are chemical changes that involve two compounds as reactants and two compounds as products.

⇒metals (or nonmetals) will 'trade'

Ex. lead (II) nitrate + potassium iodide ⇒ lead (II) iodide + potassium nitrate

$Pb^{2+}NO_3^{1-} + K^{1+}I^{1-} \rightarrow Pb^{2+}I^{1-} + K^{1+}NO_3^{1-}$

$Pb(NO_3)_2 + 2KI \rightarrow PbI_2 + 2KNO_3$

Homework

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