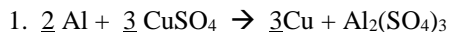


Final Review – Solved.

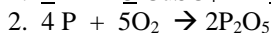
Rxns

- a) barium chloride ($\text{BaCl}_{2(\text{aq})}$) + silver nitrate ($\text{AgNO}_{3(\text{aq})}$) \rightarrow silver chloride ($\text{AgCl}_{(\text{s})}$) + barium nitrate ($\text{Ba}(\text{NO}_3)_{2(\text{aq})}$)
b) sodium carbonate ($\text{Na}_2\text{CO}_{3(\text{aq})}$) + iron (III) bromide ($\text{FeBr}_{3(\text{aq})}$) \rightarrow sodium bromide ($\text{NaBr}_{(\text{aq})}$) + iron (III) carbonate ($\text{Fe}_2(\text{CO}_3)_3(\text{s})$)
c) sodium hydroxide ($\text{NaOH}_{(\text{aq})}$) + copper (II) chloride ($\text{CuCl}_{2(\text{aq})}$) \rightarrow sodium chloride ($\text{NaCl}_{(\text{aq})}$) + copper(II) hydroxide ($\text{Cu}(\text{OH})_{2(\text{s})}$)

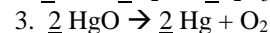
SR, O-R



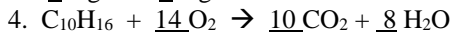
S, O-R



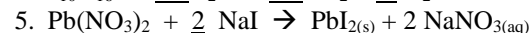
D, O-R



CC, O-R



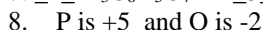
DR



no reaction



DR – Neut



Stoichiometry (1. definitions)

2. 1.2 L

3. a. 3:2 b. 329 g

4. 32000 mg

5. 6.77×10^{22} molecules

6. a. P_4H_{10}

b. 150 g

c. 38 g

7 88.4 %

Gases

1. a. 579 mm Hg

b. 1800 mm Hg

c. 104 kPa

6. 193 °C

2. 309.13 K

7. 200 mm Hg or 0.3 atm

3. 1.7 L

8. 0.46 L

4. 1200 kPa

9. Same number of particles

5. 430 mL

10. increases

Bonding

1. NH_3 , draw it, 4, tetrahedral, trigonal pyramidal, polar

2. CO_2 , draw it, 2, linear, linear, nonpolar

3. CO_3^{2-} , draw it, 3, trigonal planar, trigonal planar, polar (it's an ion with FC on two of the oxygens, 3 resonance structures)

4. 4

5. 3

6. Ionic—metals and nonmetals; covalent—nonmetals with nonmetals or metalloids

7. Lone pairs and bonds

8. Triple; triple

9. a. LDF b. LDF and dipole-dipole c. LDF and hydrogen bonding mainly

10. ionic bonds

Solutions

1. 0.255 M

3. 2.1 mL

5. Varies

7. $\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$ (l)

2. 1.1 M

4. 58.3 g

6. tap water...due to it having dissolved ions

Acids/Bases

1. HCl, HBr, HI, HNO_3 , HClO_4 , HClO_3 , H_2SO_4 , all hydroxides of group 1 and group 2 EXCEPT beryllium hydroxide & water.

2. a. $3 \times 10^{-10} \text{ M}$ b. 5.21 c. 3.575 d. 2.522 e. $5 \times 10^{-8} \text{ M}$ f. $1.1 \times 10^{-13} \text{ M}$

3. 2.6 M HCl

4. HSO_4^- is monoprotic and mono basic. H_2CO_3 is diprotic only

Thermochemistry

1. a, b

2a) 100 kJ b) endothermic

3. Reverse 1st, halve 2nd, reverse & halve 3rd, $\Delta H = -394 \text{ kJ/mole}$

4. 88.0 kJ

5. $\text{Na} + \frac{1}{2} \text{F}_2 \rightarrow \text{NaF} + 569.0 \text{ kJ}$

(look up the ΔH_f° for NaF. Because it is per mole, F_2 must be per $\frac{1}{2}$ mole)

6. 121.7 g

7. -367.6 kJ

8. 0.734 J/g °C

9. 61.9 kJ

10. -95 kJ