CH 221
Sample Quiz #5 Name: _____ Lab Section: _____
Answers

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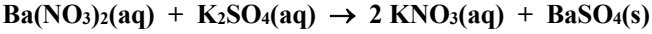
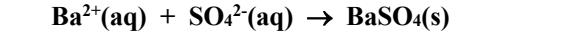
1. Complete the following problems.
   a. Write the net ionic equation for the following reaction: (3 points)



$Ba(NO_3)_2(aq) + K_2SO_4(aq) \rightarrow 2\ KNO_3(aq) + BaSO_4(s)$

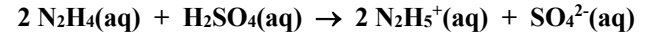


$Ba^{2+}(aq) + SO_4^{2-}(aq) \rightarrow BaSO_4(s)$

   b. Write the spectator ion(s) in the reaction in #1a. (2 points)

K^+ and NO_3^{-1}

2. Hydrazine, N_2H_4, a base like ammonia, can react with an acid such as sulfuric acid as shown below. What mass of hydrazine reacts with 155 mL of 0.310 M H_2SO_4? (5 points)



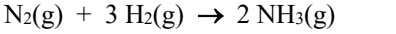
$2\ N_2H_4(aq) + H_2SO_4(aq) \rightarrow 2\ N_2H_5^+(aq) + SO_4^{2-}(aq)$

3.08 g

3. If 25 J are required to change the temperature of 5.0 g of substance A by 2.0 K, what is the specific heat of substance A? (4 points)

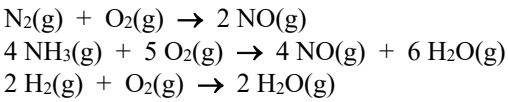
C = 2.5 J/(gK)

4. Determine ΔH for the following reaction,



$N_2(g) + 3\ H_2(g) \rightarrow 2\ NH_3(g)$

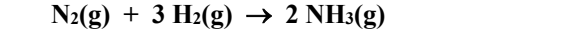
given the thermochemical equations below. (6 points)



$N_2(g) + O_2(g) \rightarrow 2\ NO(g)$ $\Delta H = +180.8$ kJ

$4\ NH_3(g) + 5\ O_2(g) \rightarrow 4\ NO(g) + 6\ H_2O(g)$ $\Delta H = -906.2$ kJ

$2\ H_2(g) + O_2(g) \rightarrow 2\ H_2O(g)$ $\Delta H = -483.6$ kJ



$N_2(g) + 3\ H_2(g) \rightarrow 2\ NH_3(g)$ **$\Delta H = -91.5$ kJ**