Chem. 6A F2007 Quiz 8 (15 points) Name: KEY
Section: _____

1. (2 points) Nomenclature

(a) NH_4NO_2 Ammonium nitrite (b) iron (II) sulfate $FeSO_4$

2. (3 points) Solutions of lead (II) nitrate and potassium iodide are mixed producing a yellow precipitate of the lead compound. Write the balanced molecular equation, the total ionic equation and the net ionic equation for the reaction. *(include all, (s), (l), (g) or (aq) where needed)*

Molecular: $Pb(NO_3)(aq) + 2KI(aq) \rightarrow PbI_2(s) + 2KNO_3(aq)$

Total ionic: $Pb^{2+}(aq) + 2NO_3^-(aq) + 2K^+(aq) + 2I^-(aq) \rightarrow PbI_2(s) + 2K^+(aq) + 2NO_3^-(aq)$

Net ionic: $Pb^{2+}(aq) + 2I^-(aq) \rightarrow PbI_2(s)$

3. (1 point) A reaction or physical process that releases energy is said to be: Exothermic

4. (3 points) Ammonia is formed from the reaction below (*unbalanced*). If 5.0 grams of hydrogen and 5.0 grams of nitrogen react, ~~how many grams ammonia will form?~~ which limits

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

$$5.0\,g\,H_2 \times \frac{1\,mol\,H_2}{2.02\,g} \times \frac{1\,mol\,N_2}{3\,mol\,H_2} \times \frac{28.01\,g}{1\,mol\,N_2} = 23.1\,g\,N_2 \text{ NEEDED}$$

Not enough N_2 ∴ N_2 limits

answer: N_2 limits

5. (3 points) The heat of combustion for methane is –890 kJ/mol. Calculate the amount of heat released when 1.604 g of methane burn.

$CH_4(g) + 2\,O_2(g) \rightarrow CO_2(g) + 2H_2O(l)$ *(unbalanced)*

$$1.604\,g\,CH_4 \times \frac{1\,mol\,CH_4}{16.04\,g} \times \frac{890\,kJ}{1\,mol\,CH_4} = 89.0\,kJ$$

answer: 89.0 kJ