Chemistry 141 Name

Dr. Cary Willard

Quiz 3a (20 points) February 20, 2014

All work must be shown to receive credit.

1. (8 points) Complete the following double displacement reactions and write complete and net ionic reactions for them. Be sure to include all state labels.
   1. CrBr2 *(aq)* + Na2CO3 *(aq)* 🡪

Conventional equation

Total ionic equation

Net ionic equation

* 1. NH4I*(aq)* + NaOH*(aq)* 🡪

Conventional equation

Total ionic equation

Net ionic equation

1. (12 points) Urea (CH4N2O) is a common fertilizer that can be synthesized by the reaction of ammonia (NH3) with carbon dioxide as shown in the reaction below. In an industrial synthesis of urea, a chemist combines 163.4 kg of ammonia with 337.6 kg of carbon dioxide and obtains 193.4 kg of urea. Determine the limiting reactant, theoretical yield of urea, mass of each reagent remaining, and percent yield for the reaction. Use the IE method.

2 NH3(aq) + CO2(aq) 🡪 CH4N2O(aq) + H2O(l)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| I |  |  |  |  |
|  |  |  |  |  |
| E |  |  |  |  |

Mass NH3 remaining mass CO2 remaining

Mass urea % yield

Chemistry 141 Name

Dr. Cary Willard

Quiz 3b (20 points) February 20, 2014

All work must be shown to receive credit.

1. (8 points) Complete the following double displacement reactions and write complete and net ionic reactions for them. Be sure to include all state labels.
   1. NiBr2 *(aq)* + (NH4)2S *(aq)* 🡪

Conventional equation

Total ionic equation

Net ionic equation

* 1. HCl *(aq)* + Li2CO3*(aq)* 🡪

Conventional equation

Total ionic equation

Net ionic equation

1. (12 points) Urea (CH4N2O) is a common fertilizer that can be synthesized by the reaction of ammonia (NH3) with carbon dioxide as shown in the reaction below. In an industrial synthesis of urea, a chemist combines 256.4 kg of ammonia with 285.6 kg of carbon dioxide and obtains 275.9 kg of urea. Determine the limiting reactant, theoretical yield of urea, mass of each reagent remaining, and percent yield for the reaction. Use the IE method.

2 NH3(aq) + CO2(aq) 🡪 CH4N2O(aq) + H2O(l)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| I |  |  |  |  |
|  |  |  |  |  |
| E |  |  |  |  |

Mass NH3 remaining mass CO2 remaining

Mass urea % yield