Chemistry 115 Name

Dr. Cary Willard

Quiz 7a (20 points) March 31, 2011

All work must be shown to receive credit. Avogadro’s number = 6.022 x 1023/mol

Acetonitrile, C3H3N, is the starting material for the production of a kind of synthetic fiber (acrylics). It can be made from propylene, C3H6, by reaction with nitric oxide, NO.

4 C3H6*(g)* + 6 NO*(g)* 🡪 4 C3H3N*(g)* + 6 H2O*(g)* + N2*(g)*

1. (3 points) How many molecules of water will be formed by the reaction of 16 molecules of propylene with excess nitric oxide?
2. (10 points) How many grams of nitrogen gas will result from the reaction of 10.0 grams of propylene with 10.0 grams of nitric oxide?

Which reagent is in excess? Propylene, C3H6

Which reagent is limiting? Nitric oxide, NO

If 2.47 grams of nitrogen gas are produced, what is the percent yield?

1. (7 points) Draw Lewis electron dot structures for each of the following atoms/molecules. Be sure to show all valence electrons as either bonds or lone pairs!
   1. Cl 
   2. O2 
   3. PBr3 

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Quiz 7b (20 points) March 31, 2011

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Acetonitrile, C3H3N, is the starting material for the production of a kind of synthetic fiber (acrylics). It can be made from propylene, C3H6, by reaction with nitric oxide, NO.

4 C3H6*(g)* + 6 NO*(g)* 🡪 4 C3H3N*(g)* + 6 H2O*(g)* + N2*(g)*

1. (3 points) How many molecules of water will be formed by the reaction of 24 molecules of propylene with excess nitric oxide?
2. (10 points) How many grams of nitrogen gas will result from the reaction of 15.0 grams of propylene with 15.0 grams of nitric oxide?

Which reagent is in excess? Propylene, C3H6

Which reagent is limiting? Nitric oxide, NO

If 1.87 grams of nitrogen gas are produced, what is the percent yield?

1. (7 points) Draw Lewis electron dot structures for each of the following atoms/molecules. Be sure to show all valence electrons as either bonds or lone pairs!
   1. S 
   2. N2 
   3. NF3 

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Quiz 7c (20 points) April 5, 2011

All work must be shown to receive credit. Avogadro’s number = 6.022 x 1023/mol

Acetonitrile, C3H3N, is the starting material for the production of a kind of synthetic fiber (acrylics). It can be made from propylene, C3H6, by reaction with nitric oxide, NO.

4 C3H6*(g)* + 6 NO*(g)* 🡪 4 C3H3N*(g)* + 6 H2O*(g)* + N2*(g)*

1. (3 points) How many molecules of acetonitrile will be formed by the reaction of 24 molecules of nitric oxide with excess polypropylene?
2. (10 points) How many grams of nitrogen gas will result from the reaction of 25.0 grams of propylene with 25.0 grams of nitric oxide?

Which reagent is in excess? Propylene, C3H6

Which reagent is limiting? Nitric oxide, NO

If 2.87 grams of nitrogen gas are produced, what is the percent yield?

1. (7 points) Draw Lewis electron dot structures for each of the following atoms/molecules. Be sure to show all valence electrons as either bonds or lone pairs!
   1. B 
   2. CO2 
   3. PCl3 

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Quiz 7d (20 points) April 5, 2011

All work must be shown to receive credit. Avogadro’s number = 6.022 x 1023/mol

Acetonitrile, C3H3N, is the starting material for the production of a kind of synthetic fiber (acrylics). It can be made from propylene, C3H6, by reaction with nitric oxide, NO.

4 C3H6*(g)* + 6 NO*(g)* 🡪 4 C3H3N*(g)* + 6 H2O*(g)* + N2*(g)*

1. (3 points) How many molecules of acetonitrile will be formed by the reaction of 36 molecules of nitric oxide with excess polypropylene?
2. (10 points) How many grams of nitrogen gas will result from the reaction of 35.0 grams of propylene with 35.0 grams of nitric oxide?

Which reagent is in excess? Propylene, C3H6

Which reagent is limiting? Nitric oxide, NO

If 4.71 grams of nitrogen gas are produced, what is the percent yield?

1. (7 points) Draw Lewis electron dot structures for each of the following atoms/molecules. Be sure to show all valence electrons as either bonds or lone pairs!
   1. Na 
   2. CO2 
   3. PBr3 