

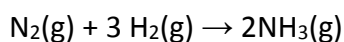
NAME _____

F2014/ CHEM1301/Exam 4

11/7/14

Multiple Choice: (4 Points each) Write the letter associated with the correct answer in the space provided.

- _____ 1. Using the following equation, how many moles of N₂ are needed to form 2 moles of NH₃?



- a) 1 mol
 - b) 2 mol
 - c) 3 mol
 - d) 4 mol
 - e) None of the above
- _____ 2. What is the molar mass of Al(NO₃)₃?
- a) 56.99 g/mol
 - b) 88.99 g/mol
 - c) 213.01 g/mol
 - d) 117.01 g/mol
 - e) None of the above
- _____ 3. I need .50 mol Na₃PO₄ for a reaction. The molar mass of Na₃PO₄ is 163.94 g/mol. How many grams should I use?
- a) 327.88 g
 - b) 81.97 g
 - c) 163.94 g
 - d) 41.00 g
 - e) None of the above
- _____ 4. A student dissolves 0.43 moles of NaCl in 200mL water. What is the molarity of the solution?
- a) .086M
 - b) 0.63M
 - c) .00215M
 - d) 2.15M
 - e) None of the Above

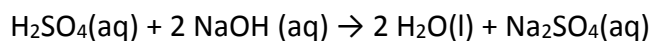
- _____ 5. You need 0.4600 moles of HCl for a reaction. How many mL of .8500M HCl do you need to measure out?
- a) 541.2 mL
 - b) 54.12 mL
 - c) 391 mL
 - d) .391 mL
 - e) None of the Above
- _____ 6. If the theoretical yield for a reaction is 5.00g of product, but you only recover 4.00g, what is the percent yield of the reaction?
- a) 120%
 - b) 20%
 - c) .80%
 - d) 80%
 - e) None of the above
- _____ 7. In a reaction, the reactant that runs out first is called the _____.
- a) Excess reactant
 - b) Limiting reactant
 - c) Percent yield
 - d) Theoretical yield
 - e) None of the above
- _____ 8. If you calculate that you will make 10.00g of a product, but the reaction has a 72% yield, what can you expect to actually recover?
- a) 13.9 g
 - b) 8.3 g
 - c) 7.20 g
 - d) 4.67 g
 - e) None of the above
- _____ 9. If 50 mL of a 1.50M solution of NaNO_3 is diluted to a final volume of 150mL, what is the molarity of the final solution?
- a) .25M
 - b) .5 M
 - c) .75 M
 - d) 3.0M
 - e) None of the above
- _____ 10. This is a free question... Happy 4 points!

Problems: Work the following problems. Show your work to get credit for the problems!

1. (10 Pts) How many mL of 12.0M HCl stock solution do I need in order to make 755mL of 1.50 M HCl solution?

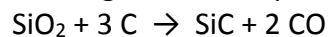
2. (10 Points) If I want to make 150mL of a .55 M solution of KOH, how many grams should I add?

3. (10 Pts) H_2SO_4 is neutralized by NaOH following the balanced chemical reaction given below:



How many mL of 1.45M NaOH are needed to completely neutralize a solution containing 65.2mL of 2.93M H_2SO_4 ?

4. (10 Points) Consider the following balanced equation:



If I have 12.4 g SiO_2 (MM=60.09 g/mol) and excess carbon, how many grams of CO (MM=28.01 g/mol) can I make?

5. (20 Pts) For the reaction shown, determine the limiting reagent and theoretical yield (in grams of Al_2O_3 , MM=101.96g/mol) if you begin with 12.3g Al and 14.6 g O_2 .

