

## Final Quiz

*Please answer on an 882-E scantron. Please put your name on your scantron. Assume reactions are not balanced.*

1. In the reaction:  $\text{Al}(\text{OH})_3 + \text{H}_2\text{SO}_4 \rightarrow \text{H}_2\text{O} + \text{Aluminum Sulfate}$  (all aqueous)

What is volume of 1.5 M Aluminum Hydroxide would you use to react with 50 mL of 3 molar Sulfuric acid to completely neutralize?

- (A) 33.33 mL (C) 66.66 mL  
(B) 10.00 mL (D) 15.00 mL

2. How many moles of Sulfuric acid are in 50 mL of 3 Molar sulfuric acid?

- (A) 0.15 (C) 6.00  
(B) 60.0 (D) 150

3. The reaction:  $\text{Al}(\text{OH})_3 + \text{H}_2\text{SO}_4 \rightarrow \text{H}_2\text{O} + \text{Aluminum Sulfate}$  (all aqueous)

If you completely neutralize of 50 mL of 3 molar Sulfuric acid with enough 1.5 M Aluminum Hydroxide, how many moles of Aluminum sulfate would you produce

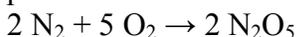
- (A) 0.05 moles  
(B) 0.10 moles  
(C) 0.15 moles  
(D) 0.20 moles

4. A 120. mL sample of a gas is at a pressure of 1.50 atm. If the temperature remains constant,

what will be its volume at 3.50 atm of pressure?

- A. 280. mL  
B. 22.9 mL  
C. 120. mL  
D. 51.4 mL

5. How many moles of oxygen are consumed when 100. L of dinitrogen pentoxide are produced in the following equation at STP?



- A. 0.560 moles  
B. 1.79 moles  
C. 0.0896 moles  
D. 11.2 moles

6. What is the pH of a 0.01 M solution of hydrochloric acid?
- A. 0.01
  - B. 1
  - C. 2
  - D. -2
  - E. None of the above
7. What is the concentration (Molarity) of a 3.52 pH solution of hydrochloric acid?
- A. 3.52
  - B. 3.02
  - C. 0.302
  - D. 0.0032
  - E. 0.00032
8. What is the concentration of a HCl solution if 20.0 mL of the solution is neutralized by 15.0 mL of a 0.10 M Ca(OH)<sub>2</sub> solution?
- A. 0.075 M
  - B. 0.038 M
  - C. 0.15 M
  - D. 0.13 M
9. What is the concentration of a H<sub>2</sub>SO<sub>4</sub> solution if 10.0 mL of the solution is neutralized by 7.8 mL of a 0.20 M NaOH solution?
- A. 0.0026 M
  - B. 0.078 M
  - C. 0.156 M
  - D. 0.31 M
10. What is the molarity of the resulting solution when 300. mL of a 0.400 M solution is diluted to 800. mL?
- A. 0.109 M
  - B. 0.150 M
  - C. 1.07 M
  - D. 1.47 M
11. What mass of silver nitrate is dissolved in 40.0 mL of a 0.400 M solution of silver nitrate?
- A. 0.272 g
  - B. 2.72 g
  - C. 27.2 g
  - D. 272 g
  - E. None of the above

12. If 12 grams of solid oxalic acid ( $\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$ ) is dissolved in a 500mL volumetric flask, what is the Molarity of the acid solution?

- (A) 0.600 M
- (B) 21.0 M
- (C) 0.0952 M
- (D) 0.190 M
- (E) 0.0476 M

13. An unknown metal has a volume of 5.25 mL and a density 2.71 g/mL. What is the weight of the metal in grams?

- (A) 1.94
- (B) 0.52
- (C) 14.2
- (D) 30
- (E) 2.0

14. An unknown metal, heated to an unknown temperature until a liquid is dropped into a calorimeter that has 60 ml of water. The water heats up from 22 degrees Celcius to 29 degrees Celcius, at which point the metal solidifies. How much energy in Kilojoules did the water absorb?

- (A) 0.100 KJ
- (B) 38.3 KJ
- (C) 35.8 KJ
- (D) 1.76 KJ
- (E) 1.01 KJ

15. After subtracting the weight of the container, the Manganese metal inside is found to weigh 8.34 grams. After reacting with Oxygen the newly formed compound weighs 13.14 grams. What is the empirical formula?

- (A) MnO
- (B) MnO<sub>2</sub>
- (C) MnO<sub>4</sub>
- (D) Mn<sub>2</sub>O

16. A 19.18 mL of 0.125 M nitric acid is titrated with a Ca(OH)<sub>2</sub> solution. The initial volume of Ca(OH)<sub>2</sub> was 14.38 and the final volume of Ca(OH)<sub>2</sub> was 28.29 mL when the solution turned very slightly pink. What is the concentration of Ca(OH)<sub>2</sub>?

- (A) 0.042 M
- (B) 0.086M
- (C) 0.170 M
- (D) 0.0000339 M

**In the reaction:  $W_s + Cl_{2(g)} \rightarrow WCl_{4(s)}$ ,**

17. If you have 10.00 grams of Tungsten to react with 8.51 grams of Chlorine gas, what would be the theoretical yield of  $WCl_{4(s)}$ , in grams?

- (A) 4.54
- (B) 78.16
- (C) 9.07
- (D) 17.58
- (E) 39.08