Chemistry 22 Quiz #4

Name_____

Please answer questions on an 882-E scantron.

1. When 0.78 g of an unknown gas in contained solely in a 560 mL container, the pressure is 780 Torr at 5 degrees Celcius. What is the molar mass of the gas in grams/mole?

a) 0.0012
b) 32.00
c) 70.90
d) 28.01
e) 2.016

2. 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

3. How many grams of O_2 gas are in 28 liters of <u>air</u> at STP? Oxygen and Nitrogen are 99% of air by volume. Oxygen is 21% of air. Nitrogen is 78% and other gases make up the last 1%.

a) 1.25
b) 0.26
c) 8.38
d) 6.25

4. What is the density of nitrogen gas at STP?
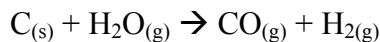   A. 0.625 g/L
   B. 0.799 g/L
   C. 1.60 g/L
   D. 1.25 g/L

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

$$2 \, N_2 + 5 \, O_2 \rightarrow 2 \, N_2O_5$$
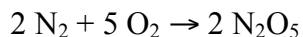
   A. 0.560 moles
   B. 1.79 moles
   C. 0.0896 moles

D. 11.2 moles

6. CH_3OH can be synthesized by the reaction

$$C_{(s)} + H_2O_{(g)} \rightarrow CO_{(g)} + H_{2(g)}$$

How many liters of hydrogen gas are formed from the complete reaction of 10.7 grams of Carbon, C? Assume that the hydrogen gas is collected at a pressure of 1.43 atm and a temperature of 42 degrees Celsius.

A. 32.2 L
B. 8.05 L
C. 14.5 L
D. 16.1 L

7. A sample of gas has a volume of 200. mL at 20.0 $^{\circ}$C. What will be its volume at 40.0 $^{\circ}$C, pressure remaining constant?
A. 18.8 mL
B. 214 mL
C. 100. mL
D. 400. mL

8. A sample of gas has a volume of 850. mL at 23.0 $^{\circ}$C and 1.10 atm. The temperature is increased to 33.0 $^{\circ}$C, at what pressure will its volume be 900. mL?
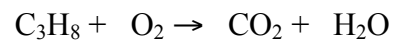A. 1.20 atm
B. 1.49 atm
C. 1.07 atm
D. 0.812 atm

9. What volume of ammonia is produced when 0.500 mole of nitrogen reacts completely in the following equation? Assume STP.

$$N_2 + 3\ H_2 \rightarrow 2NH_3$$
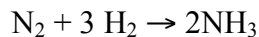
A. 1.00 L
B. 22.4 L
C. 44.8 L
D. 11.2 L

10. What mass of oxygen is consumed when 20.0 L of carbon dioxide are produced in the following equation at 5 degrees Celsius and 2 atm?

$$C_3H_8 + O_2 \rightarrow CO_2 + H_2O$$

A. 50.0 g
B. 93.5 g
C. 59.7 g
D. 47.6 g