

# Ch 10 gas laws sample questions

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Ch 10 Gas Laws Sample Questions 1) A sample of gas (24.2 g) initially at 4.00 atm was compressed from 8.00 L to 2.00 L at constant temperature. After the compression, the gas pressure was \_\_\_\_\_ atm. A) 4.00 B) 2.00 C) 1.00 D) 8.00 E) 16.0 2) A balloon originally had a volume of 4.39 L at 44 °C and a pressure of 729 torr. The balloon must be cooled to \_\_\_\_\_ °C to reduce its volume to 3.78 L (at constant pressure). A) 38 B) 0 C) 72.9 D) 273 E) 546 3) If 50.75 g of a gas occupies 10.0 L at STP, 129.3 g of the gas will occupy \_\_\_\_\_ L at STP. A) 3.92 B) 50.8 C) 12.9 D) 25.5 E) 5.08 4) A sample of an ideal gas (3.00 L) in a closed container at 25.0 °C and 76.0 torr is heated to 300 °C. The pressure of the gas at this temperature is \_\_\_\_\_ torr. A) 912 B) 146 C) 76.5 D) 39.5 E) 2.53 5) The reaction of 50 mL of gas with 50 mL of gas via the equation: will produce a total of \_\_\_\_\_ mL of products if pressure and temperature are kept constant. A) 100 B) 50 C) 200 D) 150 E) 250 6) The amount of gas that occupies 60.82 L at 31 °C and 367 mmHg is \_\_\_\_\_ mol. A) 1.18 B) 0.850 C) 894 D) 11.6 E) 0.120 7) At a temperature of \_\_\_\_\_ °C, 0.444 mol of CO gas occupies 11.8 L at 889 torr. A) 379 B) 73 C) 14 D) 32 E) 106 8) The density of ammonia gas in a 4.32 L container at 837 torr and 45.0 °C is \_\_\_\_\_ g/L. A) 3.86 B) 0.717 C) 0.432 D) 0.194 E) 4.22 9) The molecular weight of a gas is \_\_\_\_\_ g/mol if 3.5 g of the gas occupies 2.1 L at STP. A) 41 B) 5.5 C) 37 D) 4.6 E) 2.7 10) The volume of hydrogen gas at 38.0 °C and 763 torr that can be produced by the reaction of 4.33 g of zinc with excess sulfuric acid is \_\_\_\_\_ L. A) 1.69 B) 2.71 C) 3.69 D) 2.84 E) 0.592 11) The Mond process produces pure nickel metal via the thermal decomposition of nickel tetracarbonyl: What volume (L) of CO is formed from

the complete decomposition of 444 g of at 752 torr and 22.0 °C? A) 0.356  
B) 63.7 C) 255 D) 20.2 E) 11.0

12) A vessel contained , Ar, He, and Ne. The total pressure in the vessel was 987 torr. The partial pressures of nitrogen, argon, and helium were 44.0, 486, and 218 torr, respectively. The partial pressure of neon in the vessel was \_\_\_\_\_ torr. A) 42.4 B) 521 C) 19.4 D) 239 E) 760

13) A sample of He gas (3.0 L) at 5.6 atm and 25 °C was combined with 4.5 L of Ne gas at 3.6 atm and 25 °C at constant temperature in a 9.0 L flask. The total pressure in the flask was \_\_\_\_\_ atm. Assume the initial pressure in the flask was 0.00 atm. A) 2.6 B) 9.2 C) 1.0 D) 3.7 E) 24

14) (5.00 g) and (5.00 g) were placed in a 750.0 mL container at 50.0 °C. The total pressure in the container was \_\_\_\_\_ atm. A) 0.192 B) 4.02 C) 2.76 D) 6.78 E) 1.60

15) A sample of gas (2.0 mmol) effused through a pinhole in 5.5 s. It will take \_\_\_\_\_ s for the same amount of to effuse under the same conditions. A) 7.3 B) 5.5 C) 3.1 D) 4.2 E) 9.6

16) According to kinetic-molecular theory, in which of the following gases will the root-mean-square speed of the molecules be the highest at 200 °C? A) HCl B) C) D) E) None. The molecules of all gases have the same root-mean-square speed at any given temperature.

17) Which of the following is not part of the kinetic-molecular theory? A) Atoms are neither created nor destroyed by ordinary chemical reactions. B) Attractive and repulsive forces between gas molecules are negligible. C) Gases consist of molecules in continuous, random motion. D) Collisions between gas molecules do not result in the loss of energy. E) The volume occupied by all of the gas molecules in a container is negligible compared to the volume of the container.

18) A sample of oxygen gas was found to effuse at a rate

equal to three times that of an unknown gas. The molecular weight of the unknown gas is \_\_\_\_\_ g/mol. A) 288 B) 96 C) 55 D) 4 E) 10. 7 19) A real gas will behave most like an ideal gas under conditions of \_\_\_\_\_. A) high temperature and high pressure B) high temperature and low pressure C) low temperature and high pressure D) low temperature and low pressure E) STP 20) Which one of the following gases would deviate the least from ideal gas behavior? A) Ne B) C) Kr D) E)