Chemistry 115 Name

Dr. Cary Willard

Quiz 9A (20 points) April 20, 2009

PV=nRT, 760 torr = 760 mmHg = 1 atm = 101 kPa = 14.7 psi = 30 in Hg,

R=0.0821 L atm/mol K=62.4 L torr/mol K

1. (3 points) Explain why it is necessary to add air to a car’s tires during the winter?
2. (3 points) The pressure of a sample of neon gas is 578 torr. What is the pressure in atmospheres?
3. (3 points) A sample of nitrogen gas occupies a volume of 362 mL at 15oC. What is the volume of the nitrogen gas if the temperature is increased to 55oC?
4. (4 points) A 3.48 L sample of methane gas contains methane at 2.94 atm pressure and 25.0oC. What is the mass of the gas? (Hint: Calculate the number of moles first.)
5. (3 points) The atmosphere of a newly discovered planet is composed of nitrogen (364 mm Hg), methane gas (632 mm Hg), and bromine gas (499 mm Hg). What is the atmospheric pressure on this planet?
6. (4 points) Given the reaction 4 NH3(g) + 5 O2(g) 🡪 4 NO(g) + 6 H2O(g). How many L of water will be produced by the reaction of 16.8 L of ammonia (NH3) in excess oxygen at 25oC and 1.14 atm pressure?

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Quiz 9B (20 points) April 20, 2009

PV=nRT, 760 torr = 760 mmHg = 1 atm = 101 kPa = 14.7 psi = 30 in Hg,

R=0.0821 L atm/mol K=62.4 L torr/mol K

1. (3 points) Explain why it is necessary to add air to a car’s tires during the winter?
2. (3 points) The pressure of a sample of neon gas is 866 torr. What is the pressure in atmospheres?
3. (3 points) A sample of nitrogen gas occupies a volume of 875 mL at 15oC. What is the volume of the nitrogen gas if the temperature is increased to 55oC?
4. (4 points) A 6.87 L sample of methane gas contains methane at 2.94 atm pressure and 25.0oC. What is the mass of the gas? (Hint: Calculate the number of moles first.)
5. (3 points) The atmosphere of a newly discovered planet is composed of nitrogen (678 mm Hg), methane gas (387 mm Hg), and bromine gas (125 mm Hg). What is the atmospheric pressure on this planet?
6. (4 points) Given the reaction 4 NH3(g) + 5 O2(g) 🡪 4 NO(g) + 6 H2O(g). How many L of water will be produced by the reaction of 38.7 L of ammonia (NH3) in excess oxygen at 25oC and 1.14 atm pressure?