Chemistry 141 Name

Dr. Cary Willard

Quiz 4a February 25, 2010

PV=nRT, R=0.0821 L atm/mol K = 62.4 L torr/mol K, 1 atm = 760 torr

1. (5 points) A bacterial culture isolated from sewage produced 35.5 mL of methane, CH4, at 31oC and 753 mm Hg. What is the volume of this methane at standard temperature and pressure (0oC and 760 mm Hg)?
2. (5 points) According to your calculations, a reaction should yield 5.67 g of oxygen gas, O2. What do you expect the volume to be at 23oC and 0.985 atm?
3. (5 points) You vaporize a liquid substance at 100oC and 755 mm Hg. The volume of 0.548 g of vapor is 237 mL. What is th molecular mass of the substance?
4. (5 points) Oxygen gas is converted to ozone gas under certain conditions. If oxygen gas is introduced into a50.0 mL flask with a pressure of 497 torr and 529 K and allowed to react, the final pressure in the flask is 447 torr. How many moles of ozone have been formed in the reaction?

3O2(g) 🡪 2 O3(g)

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Quiz 4b February 25, 2010

PV=nRT, R=0.0821 L atm/mol K = 62.4 L torr/mol K, 1 atm = 760 torr

1. (5 points) A bacterial culture isolated from sewage produced 53.5 mL of methane, CH4, at 31oC and 753 mm Hg. What is the volume of this methane at standard temperature and pressure (0oC and 760 mm Hg)?
2. (5 points) According to your calculations, a reaction should yield 3.87 g of oxygen gas, O2. What do you expect the volume to be at 23oC and 0.985 atm?
3. (5 points) You vaporize a liquid substance at 100oC and 755 mm Hg. The volume of 0.548 g of vapor is 278 mL. What is th molecular mass of the substance?
4. (5 points) Oxygen gas is converted to ozone gas under certain conditions. If oxygen gas is introduced into a50.0 mL flask with a pressure of 541 torr and 529 K and allowed to react, the final pressure in the flask is 487 torr. How many moles of ozone have been formed in the reaction?

3O2(g) 🡪 2 O3(g)