**Mini-quiz #24 Chemistry 1114 Friday 6 December 2013**

**6 pts**

**Your name:\_\_\_\_\_\_\_\_\_answers\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ A**

1) An ideal gas initially at 3 atm occupies 4 L at constant temperature and constant moles.

The volume is then adjusted to 1.2 L. What is the final pressure in the piston?

P1V1 =P2V2

3\*4=P2\*1.2

12/1.2=10=P2

\_\_\_\_10\_\_\_\_\_Pfinal(atm)

2) An ideal gas at constant P and constant moles is heated from 100 oC to 659.73oC.

Given that the initial volume, Vinitial = 2 L at 100oC, what is the final volume, Vfinal at 659.73oC?

[T(K) = 273.15 + T(oC)]

Ti = 373.15 K Tf=932.88 K

V1/T1=V2/T2

2/373.15=V2/932.88

V2 =2\*932.88/373.15=5

\_\_\_\_\_5\_\_\_\_\_= Vfinal(L)

3) A helium balloon tied to a rock is thrown out of a plane. Initially, its temperature T1=150 K at a pressure P1= 0.2 atm. The balloon is then dragged earthward by the rock until it hits dirt at which point the final pressure, P2 =0.9 atm at a temperature T2 =300 K. The balloon now has a final volume V2 =0.4445 L. What was the initial volume, V1?

P1V1 = P2V2

T1 T2

0.2\*V1 = 0.9\*0.4445=> V1 =150\*0.9\*0.4445=1

150 300 0.2\*300 \_\_\_\_1\_\_\_\_=V­1(L)

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**Your name:\_\_\_\_\_\_answers\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ B**

1) An ideal gas initially at 6 atm occupies 8 L at constant temperature and constant moles.

The volume is then adjusted to 2.4 L. What is the final pressure in the piston?

P1V1 =P2V2

6\*8=P2\*2.4

48/2.4=20=P2

\_\_\_\_20\_\_\_\_\_Pfinal(atm)

2) An ideal gas at constant P and constant moles is heated from 100 oC to 659.73oC.

Given that the initial volume, Vinitial = 4 L at 100oC, what is the final volume, Vfinal at 659.73oC?

[T(K) = 273.15 + T(oC)]

V1/T1=V2/T2

4/373.15=V2/932.88

V2 =4\*932.88/373.15=10

\_\_\_\_\_10\_\_\_\_\_= Vfinal(L)

3) A helium balloon tied to a rock is thrown out of a plane. Initially, its temperature T1=150 K at a pressure P1= 0.1 atm. The balloon is then dragged earthward by the rock until it hits dirt at which point the final pressure, P2 =0.9 atm at a temperature T2 =300 K. The balloon now has a final volume V2 =0.4445 L. What was the initial volume, V1?

P1V1 = P2V2

T1 T2

0.1\*V1 = 0.9\*0.4445=> V1 =150\*0.9\*0.4445=2

150 300 0.1\*300 \_\_\_\_2\_\_\_\_=V­1(L)