Chemistry 141 Name

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Quiz 9 (20 points) December 4, 2008

All work must be shown to receive credit.

=iMRT, Tb=*imkb,* Tf=*imkf*

R=0.0821 L atm/mol K = 62.4 L torr/mol K = 8.31 J/mol K

1. (8 points) An aqueous solution of a certain organic compound has a density of 1.063 g/mL, an osmotic pressure of 12.16 atm at 25.0oC, and a freezing point of -1.03oC. The compound is known not to dissociate in water. What is the molar mass of the compound? Kf(H2O)=1.86 oC/m
2. (4 points) Write an equilibrium expression for the following reactions
   1. Fe2O3(s) + 3 CO(g) ↔ 2 Fe(l) + 3 CO2(g)

Kc=

* 1. 4 Fe(s) + 3 O2(g) ↔ 2 Fe2O3(s)

Kp=

1. (8 points) A sample of HI (9.30 x 10-3mol) was placed in an empty 2.00 L container at 1000K. After equilibrium was reached, the concentration of I2 was 6.29 x 10-4 M. Calculate the value of Kc at 1000K for the reaction H2(g) + I2(g) ↔2 HI(g).