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 by dissolving 3.296 g of the compound in water and diluting it to a total volume of 20.00 mL. The osmotic pressure of the solution is 12.16 atm at 25.0oC. What is the molar mass of the compound?
2. (4 points) Write an equilibrium expression for the following reactions
   1. Fe2O3(s) + 3 CO(g) ↔ 2 Fe(l) + 3 CO2(g)

* 1. 4 Fe(s) + 3 O2(g) ↔ 2 Fe2O3(s)

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).

[HI]initial = 9.30 x 10-3mol/2.00 L = 4.65 x 10-3M

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | H2(g) | + | I2(g) | ↔ | 2 HI(g) |
| I | 0 M |  | 0 M |  | 4.65 x 10-3M |
|  | +x |  | +x |  | -2x |
| E | X  2.01 x 10-3 M |  | X  =2.01 x 10-3 M |  | 4.65 x 10-3M – 2x  = 6.29 x 10-4 M  X = 2.01 x 10-3 M |