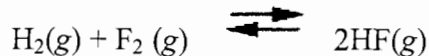


****SHOW ALL WORK TO RECEIVE CREDIT****

1. (3 Pts) Write the expressions for both K_c and K_p for the reaction



2. (6 Pts) At a high temperature, the following reaction has an equilibrium constant of 1.0×10^2 .



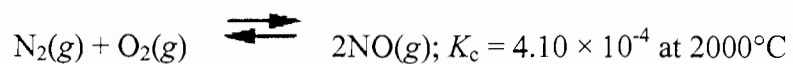
If 1.00 mol of each of H_2 and F_2 are allowed to come to equilibrium in a 10.0 L vessel, calculate the equilibrium concentration of H_2 and HF and then determine how many moles of each element or compound are present at equilibrium.

3. (6 Pts) When 0.152 mol of solid PH_3BCl_3 is introduced into a 3.0 L container at a certain temperature, 8.44×10^{-3} mol of PH_3 is present at equilibrium:



Construct a reaction table (I.C.E.) for the process, and use it to calculate K_c at this temperature.

4. (6 Pts) Consider the following gas-phase equilibrium reaction:



If 1.0 mol of NO is introduced into a 1.0 L container at 2000°C, what is the concentration of NO when equilibrium is reached?

5. (4 Pts) Consider the equilibrium: $\text{A}(\text{s}) \rightleftharpoons \text{B}(\text{s}) + \text{C}(\text{g}); \Delta H^\circ_{\text{rxn}} > 0$

Predict and explain how or whether the following actions would affect this equilibrium.

a. adding more solid A

b. lowering the temperature

c. increasing the pressure on the system by reducing its volume

d. adding helium gas to increase the total pressure