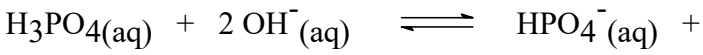
Chem 10123, Quiz 2 Name: _____
January 29, 2020 (Please Print)

1. (3 points) Complete the equilibrium constant (K_c) expression for the following reaction.

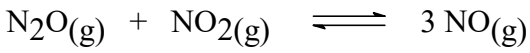


$$H_3PO_{4(aq)} + 2\ OH^-_{(aq)} \rightleftharpoons HPO_4^-{}_{(aq)} + 2\ H_2O_{(l)}$$

K_c = _____

2. (3 points) If $K_c = 125$ for this reaction: $2\ A \rightleftharpoons 3\ B + C$, then the value of K_c for the related reaction: $B + 1/3\ C \rightleftharpoons 2/3\ A$, is equal to _____.

3. Consider the following reaction that is known to be endothermic ($\Delta H° = 156$ kJ).



$$N_2O_{(g)} + NO_{2(g)} \rightleftharpoons 3\ NO_{(g)}$$

(a) (4 points) Which of the factors listed below would cause the equilibrium concentration of NO to increase? Circle all that apply.

add a catalyst increase the temperature remove some NO_2

decrease the pressure add some N_2O

(b) (10 points) **SHOW ALL WORK.** ***Clearly state and justify any assumptions that you may make.*** At 27 °C, the above reaction has an equilibrium constant, $K_c = 2.70 \times 10^{-20}$. In one experiment, a 1.00 L container was filled with 0.020 moles of N_2O and 0.050 moles of NO_2. Determine the molar concentration of NO in this system after equilibrium is established.