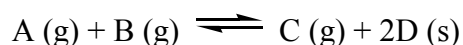


1 (4 pts total) Consider an exothermic chemical reaction



1.00 mole of A and 1.00 mole of B are placed in a 2.00 liter container. After equilibrium has been established, 0.10 mole of C is present in the container.

a) (1 pt) Calculate the equilibrium constant for the reaction.

b) (1 pt) Based on your answer to a), does the equilibrium favor formation of reactants or products?

c) (2 pts) Suppose that the reaction is at equilibrium. Which direction will the equilibrium shift (i.e., tend to shift toward the formation of reactants, toward the formation of products, or have no effect) if the system is subjected to each of the following changes:

Stress 1 B is added

Stress 2 The amount of C is increased

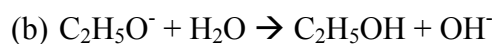
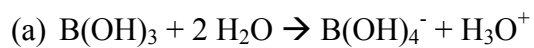
Stress 3 The temperature is increased

Stress 4 The amount of D is increased

Stress 5 The partial pressure of B is decreased

Your names _____

2. **(2 pts total)** For each of the following reactions, identify the acid, the base, the conjugate base, and the conjugate acid.



3. **(4 pts total)** Liquid ammonia autoionizes just as water does.

a) (2 pts) Write a balanced equation for the autoionization process of liquid ammonia.

b) (1 pt) What is the conjugate acid of NH_3 ? The conjugate base?

c) (1 pt) If NaNH_2 is dissolved in liquid ammonia, is it an acid or a base?