

Chapter 15 Worksheet 1 (Equilibrium)

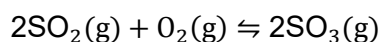
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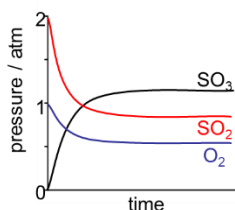
Instructions:

- Please enter your first and last name as it appears on the eLC roster (do not use a nickname).
- Your UGA myID is a combination of letters and numbers (example: mine is sre13137). **Do not use your 81x number.**
- If you do not have a printer, type your answers in the then upload the worksheet template to Gradescope by Friday, March 5 at 11:59 pm. Write your work on separate sheets of paper, convert to a PDF and upload to eLC.
- If you have a printer download the worksheet, convert it to a PDF and upload to Gradescope by Friday, March 5 at 11:59 pm. You do not need to upload anything to eLC.

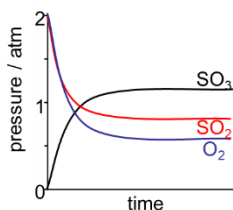
1. For the reaction of sulfur dioxide with oxygen, which of the following plots of pressure versus time is correct.



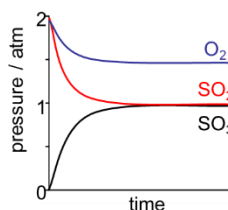
$$K_p = 3.4$$



A.

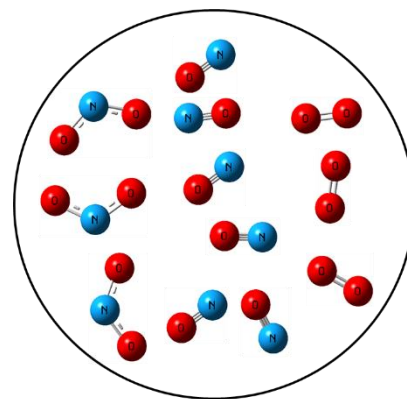


B.



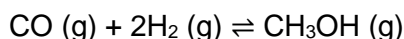
C.

2. The diagram represents an equilibrium mixture for the equation. Calculate the equilibrium constant, K_p at this temperature?



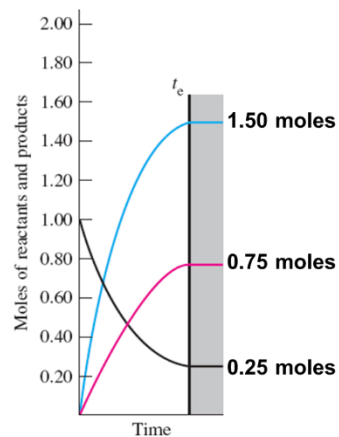
Each molecule represents 1 atm.

3. Consider the reaction.



1.00 mole of gaseous methanol was put into a 10.0 L flask at 483 K. The equilibrium mixture as depicted was found. Calculate the value of the equilibrium constant, K_c .

- A. 0.22
- B. 1.5
- C. 2.2
- D. 15



4. At equilibrium:

$$k_f[\text{SO}_2]^2[\text{O}_2] = k_r[\text{SO}_3]^2$$

$$k_f = 0.15 \text{ M}^{-2} \text{ s}^{-1}$$

$$k_r = 1.0 \text{ M}^{-1} \text{ s}^{-1}$$

What is the equilibrium constant expression?

A. $K_c = \frac{[\text{SO}_2]^2[\text{O}_2]}{[\text{SO}_3]^2}$

B. $K_c = \frac{[\text{SO}_3]^2[\text{O}_2]}{[\text{SO}_2]^2}$

C. $K_c = \frac{[\text{SO}_3]^2}{[\text{SO}_2]^2[\text{O}_2]}$

5. For the reaction below, K_c is 1.4×10^4 . What can you say about this reaction at equilibrium?



$$K_c = \frac{[B]}{[A]}$$

A. It is product favored

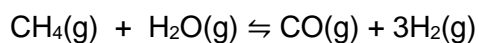
B. $[B] > [A]$

C. $[B] < [A]$

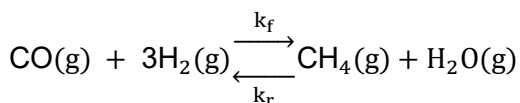
D. It is reactant favored

E. $[B] = [A]$

6. For the following reaction, $K_p = 7.7 \times 10^{24}$ at 25°C . Calculate K_c .



7. Which of these statements is correct?

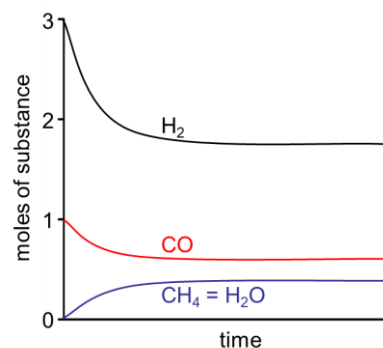


A. At equilibrium the reaction stops.

B. At equilibrium the rate constants for the forward and reverse reactions are equal.

C. At equilibrium the rates of the forward and reverse reactions are equal.

D. At equilibrium the rates of the forward and reverse reactions are zero.



8. Which of the following statements is **FALSE**?

☐

- A. When $K \gg 1$, the forward reaction is favored and essentially goes to completion.
- B. When $K \ll 1$, the reverse reaction is favored and the forward reaction does not proceed to a great extent.
- C. When $K \approx 1$, neither the forward or reverse reaction is strongly favored, and about the same amount of reactants and products exist at equilibrium.
- D. $K \gg 1$ implies that the reaction is very fast at producing products.
- E. None of the above

9. Express the equilibrium constant for the following reaction.

