

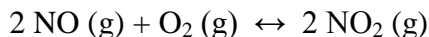
## Primary Topics of Equilibrium Part 1 Assignment

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Watch the following video podcasts and answer each question below:

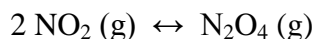
Primary Topics of Equilibrium Part 1: <https://www.youtube.com/watch?v=GsbmRbko1s>

- 1) Determine the expression for the equilibrium constant,  $K_c$ , for the following reaction.



- (A)  $K_c = [\text{NO}]^2 [\text{O}_2] / [\text{NO}_2]^2$   
(B)  $K_c = [\text{NO}_2]^2 / [\text{NO}]^2 [\text{O}_2]$   
(C)  $K_c = 2 [\text{NO}] [\text{O}_2] / 2 [\text{NO}_2]$   
(D)  $K_c = 2 [\text{NO}_2] / 2 [\text{NO}] [\text{O}_2]$   
(E)  $K_c = [\text{NO}] + [\text{O}_2] / [\text{NO}_2]$

- 2) Determine the expression for the equilibrium constant,  $K_p$ , for the following reaction.

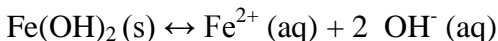


- (A)  $K_p = P_{\text{N}_2\text{O}_4} / P_{\text{NO}_2}$   
(B)  $K_p = P_{\text{NO}_2} / P_{\text{N}_2\text{O}_4}$   
(C)  $K_p = P_{\text{N}_2\text{O}_4} / P_{\text{NO}_2}^2$   
(D)  $K_p = P_{\text{NO}_2}^2 / P_{\text{N}_2\text{O}_4}$   
(E)  $K_p = P_{\text{NO}_2}^2 + P_{\text{N}_2\text{O}_4}$

- 3) Determine the expression for the equilibrium constant,  $K_a$ , for a weak acid like  $\text{HC}_2\text{H}_3\text{O}_2$ .

- (A)  $K_a = [\text{C}_2\text{H}_3\text{O}_2^-] [\text{H}_3\text{O}^+] / [\text{HC}_2\text{H}_3\text{O}_2] [\text{H}_2\text{O}]$   
(B)  $K_a = [\text{C}_2\text{H}_3\text{O}_2^-] [\text{H}_3\text{O}^+] / [\text{HC}_2\text{H}_3\text{O}_2]$   
(C)  $K_a = [\text{HC}_2\text{H}_3\text{O}_2] [\text{H}_2\text{O}] / [\text{C}_2\text{H}_3\text{O}_2^-] [\text{H}_3\text{O}^+]$   
(D)  $K_a = [\text{HC}_2\text{H}_3\text{O}_2] / [\text{C}_2\text{H}_3\text{O}_2^-] [\text{H}_3\text{O}^+]$   
(E)  $K_a = [\text{HC}_2\text{H}_3\text{O}_2]$

- 4) Determine the expression for the equilibrium constant,  $K_{sp}$ , for the following reaction.



- (A)  $K_{sp} = [\text{Fe}^{2+}] [\text{OH}^-]^2 / [\text{Fe}(\text{OH})_2]$   
(B)  $K_{sp} = [\text{Fe}] [\text{OH}]$   
(C)  $K_{sp} = [\text{Fe}][\text{OH}]^2$   
(D)  $K_{sp} = 1 / [\text{Fe}^{2+}] [\text{OH}^-]^2$   
(E)  $K_{sp} = [\text{Fe}^{2+}] [\text{OH}^-]^2$

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5) Determine which chemical reaction matches the equilibrium expression below.

$$K_{sp} = [\text{Ca}^{2+}]^3 [\text{PO}_4^{3-}]^2$$

