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1. 016 Chapter #021

What is the pOH of a 0.0085 M KOH solution?

Student Response	Value	Correct Answer	Feedback
a. 2.1			
b. 4.8			
c. 9.2			
d. 11.9			
e. None of these choices is correct.			

Score: 5/5

2. 016 Chapter #031

Acid strength decreases in the series $\text{HI} > \text{HSO}_4^- > \text{HF} > \text{HCN}$. Which of these anions is the weakest base?

Student Response	Value	Correct Answer	Feedback
a. I^-			
b. SO_4^{2-}			
c. F^-			
d. CN^-			

Score: 5/5

3. 016 Chapter #082

In aqueous solutions at 25°C, the sum of the ion concentrations ($[\text{H}^+] + [\text{OH}^-]$) equals 1×10^{-14} .

Student Response	Value	Correct Answer	Feedback
a. TRUE			
b. FALSE			

Score: 5/5

4. **016 Chapter #073**

Which one of the following is a Lewis acid but not a Brønsted-Lowry acid?

Student Response	Value	Correct Answer	Feedback
a. Fe ³⁺			
b. H ₃ O ⁺			
c. HSO ₄ ⁻			
d. NH ₃			
e. H ₂ O			

Score: 5/5

5. **016 Chapter #041**

Find the pH of a 0.183 M aqueous solution of hypobromous acid (HOBr), for which $K_a = 2.06 \times 10^{-9}$.

Student Response	Value	Correct Answer	Feedback
a. 4.72			
b. 8.69			
c. 3.97			
d. 4.34			
e. 9.28			

Score: 5/5

6. **016 Chapter #002**

What is the name of a proton acceptor in a reaction?

Student Response	Value	Correct Answer	Feedback
a. Arrhenius acid			
b. Arrhenius base			
c. Brønsted-Lowry acid			
d. Brønsted-Lowry base			
e. Lewis base			

Score: 5/5

7. **016 Chapter #051**

A strong acid leads to a:

Student Response	Value	Correct Answer	Feedback
a. weak conjugate acid.			
b. strong conjugate base.			
c. weak conjugate base.			
d. strong base.			
e. pure water.			

Score: 5/5

8. **015 Chapter #002**

Which is the correct equilibrium constant expression for the following reaction?



Student Response	Value	Correct Answer	Feedback
a. $K_c = \frac{[\text{H}_2\text{O}]}{[\text{H}_2]}$			
b. $K_c = \frac{[\text{Fe}][\text{H}_2\text{O}]}{[\text{Fe}_2\text{O}_3]}$			
c. $K_c = \frac{[\text{Fe}_2\text{O}_3][\text{H}_2]}{[\text{Fe}][\text{H}_2\text{O}]}$			
d. $K_c = \frac{[\text{Fe}][\text{H}_2\text{O}]}{[\text{Fe}_2\text{O}_3][\text{H}_2]}$			
e. $K_c = \frac{[\text{H}_2]}{[\text{H}_2\text{O}]}$			

Score: 5/5

9. **015 Chapter #031**

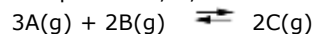
At a certain temperature the reaction $\text{CO}_2(\text{g}) + \text{H}_2(\text{g}) \rightleftharpoons \text{CO}(\text{g}) + \text{H}_2\text{O}(\text{g})$ has $K_c = 2.50$. If 2.00 mol of carbon dioxide and 1.5 mol of hydrogen are placed in a 5.00 L vessel and equilibrium is established, what will be the concentration of carbon monoxide?

Student Response	Value	Correct Answer	Feedback
a. 0.091 M			
b. 0.191 M			
c. 0.209 M			
d. 0.913 M			
e. 1.05 M			

Score: 5/5

10. **015 Chapter #021**

Compounds A, B, and C react according to the following equation.



At 100°C a mixture of these gases at equilibrium showed that $[\text{A}] = 0.855 \text{ M}$, $[\text{B}] = 1.23 \text{ M}$, and $[\text{C}] = 1.75 \text{ M}$. What is the value of K_c for this reaction?

Student Response	Value	Correct Answer	Feedback
a. 0.309			
b. 0.601			
c. 1.66			
d. 3.24			
e. greater than 10			

Score: 5/5

11. **016 Chapter #067**

A solution is prepared by adding 0.10 mol of lithium nitrate, LiNO_3 , to 1.00 L of water. Which statement about the solution is correct?

Student Response	Value	Correct Answer	Feedback
a. The solution is basic.			
b. The solution is neutral.			

c. The solution is weakly acidic.

d. The solution is strongly acidic.

e. The values for K_a and K_b for the species in solution must be known before a prediction can be made.

12. 015 Chapter #041

Hydrogen sulfide can be formed in the following reaction:

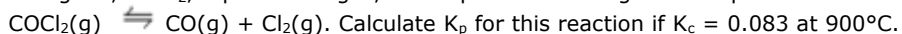


The equilibrium constant $K_p = 106$ at 1023 K. Estimate the value of K_p at 1218 K ($R = 8.314 \text{ J/mol K}$).

Student Response	Value	Correct Answer	Feedback
a. 5.05			
b. 18.8			
c. 34.7			
d. 88.9			
e. 598			

13. 015 Chapter #011

Phosgene, COCl_2 , a poisonous gas, decomposes according to the equation



Student Response	Value	Correct Answer	Feedback
a. 0.125			
b. 8.0			
c. 6.1			
d. 0.16			
e. 0.083			

Score: 5/5

14. 015 Chapter #071

75.0 g of $\text{PCl}_5(\text{g})$ is introduced into a 3.00 L vessel containing 10.0 g of $\text{Cl}_2(\text{g})$, and the system is allowed to reach equilibrium at 250°C . $\text{PCl}_5(\text{g}) \rightleftharpoons \text{PCl}_3(\text{g}) + \text{Cl}_2(\text{g})$
If $K_p = 1.80$ for this reaction, what is the total pressure inside the vessel at equilibrium ($R = 0.0821 \text{ atm L/mol K}$)?

Student Response	Value	Correct Answer	Feedback
a. 6.83 atm			
b. 8.85 atm			
c. 5.38 atm			
d. 3.47 atm			
e. 7.42 atm			

15. 015 Chapter #081

If the system $3\text{H}_2(\text{g}) + \text{N}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$ is at equilibrium and more N_2 is added, a net reaction that consumes some of the added N_2 will occur until a new equilibrium is reached.

Student Response	Value	Correct Answer	Feedback
a. TRUE			
b. FALSE			

Score: 5/5

16. 015 Chapter #055

Consider the following reactions and their associated equilibrium constants:



For the reaction $\text{A} + 2\text{B} \rightleftharpoons \text{D} + \text{E}$, having equilibrium constant K_c ,

Student Response	Value	Correct Answer	Feedback
a. $K_c = K_1 + K_2$.			
b. $K_c = K_1/K_2$.			
c. $K_c = K_1 - K_2$.			

d. $K_c = (K_1)(K_2)$.

e. $K_c = K_2/K_1$.

Score: 5/5

17. 015 Chapter #061

In which of these gas-phase equilibria is the yield of products increased by increasing the total pressure on the reaction mixture?

Student Response	Value	Correct Answer	Feedback
a. $\text{CO(g)} + \text{H}_2\text{O(g)} \rightleftharpoons \text{CO}_2\text{(g)} + \text{H}_2\text{(g)}$			
b. $2\text{NO(g)} + \text{Cl}_2\text{(g)} \rightleftharpoons 2\text{NOCl(g)}$			
c. $2\text{SO}_3\text{(g)} \rightleftharpoons 2\text{SO}_2\text{(g)} + \text{O}_2\text{(g)}$			
d. $\text{PCl}_5\text{(g)} \rightleftharpoons \text{PCl}_3\text{(g)} + \text{Cl}_2\text{(g)}$			
e. $2\text{H}_2\text{O}_2\text{(g)} \rightleftharpoons 2\text{H}_2\text{O(g)} + \text{O}_2\text{(g)}$			

Score: 5/5

18. 016 Chapter #011

Identify the conjugate base of HPO_4^{2-} in the reaction $\text{HCO}_3^- + \text{HPO}_4^{2-} \rightleftharpoons \text{H}_2\text{CO}_3 + \text{PO}_4^{3-}$.

Student Response	Value	Correct Answer	Feedback
a. H_2O			
b. HCO_3^-			
c. H_2CO_3			
d. PO_4^{3-}			
e. None of these			

choices is correct.

Score: 5/5

19. 015 Chapter #048

At 35°C, the equilibrium constant for the reaction $2\text{NOCl}(\text{g}) \rightleftharpoons 2\text{NO}(\text{g}) + \text{Cl}_2(\text{g})$ is $K_c = 1.6 \times 10^{-5}$. An equilibrium mixture was found to have the following concentrations of Cl_2 and NOCl : $[\text{Cl}_2] = 1.2 \times 10^{-2}$ M; $[\text{NOCl}] = 2.8 \times 10^{-1}$ M. Calculate the concentration of $\text{NO}(\text{g})$ at equilibrium.

Student Response	Value	Correct Answer	Feedback
a. 1.0×10^{-4} M			
b. 1.0×10^{-2} M			
c. 2.8×10^{-1} M			
d. 2.4×10^{-2} M			
e. 1.6×10^{-3} M			

Score: 0/5

20. 016 Chapter #057

Ammonium chloride is used as an electrolyte in dry cells. Which of the following statements about a 0.10 M solution of NH_4Cl , is correct?

Student Response	Value	Correct Answer	Feedback
a. The solution is weakly basic.			
b. The solution is strongly basic.			
c. The solution is neutral.			
d. The solution is acidic.			
e. The values for K_a and K_b for the			

species in
solution
must be
known
before a
prediction
can be
made.

Score: 5/5