

For help with these problems

[www.tutor-homework.com](http://www.tutor-homework.com)

Be sure to mention the filename:

Chemistry\_Questions\_0052

[www.tutor-homework.com](http://www.tutor-homework.com) (for tutoring, homework help, or help with online classes)

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. $\text{I}^-$			
b. $\text{SO}_4^{2-}$			
c. $\text{F}^-$			
d. $\text{CN}^-$			

Score: 5/5

3. **016 Chapter #082**

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

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. $\text{Fe}^{3+}$			
b. $\text{H}_3\text{O}^+$			
c. $\text{HSO}_4^-$			
d. $\text{NH}_3$			
e. $\text{H}_2\text{O}$			

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**

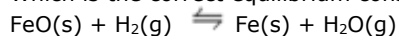
A strong acid leads to a:

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.  $K_c = \frac{[H_2]}{[H_2O]}$

---

Score: 5/5

9. **015 Chapter #031**

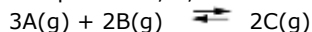
At a certain temperature the reaction  $CO_2(g) + H_2(g) \rightleftharpoons CO(g) + H_2O(g)$  has  $K_c = 2.50$ . If 2.00 mol of carbon dioxide and 1.5 mol of hydrogen are placed in a 5.00 L vessel and equilibrium is established, what will be the concentration of carbon monoxide?

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  $[A] = 0.855$  M,  $[B] = 1.23$  M, and  $[C] = 1.75$  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.

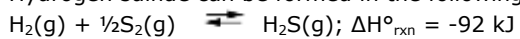
---

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:

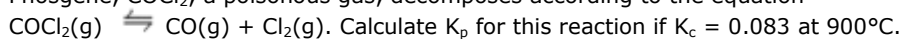


The equilibrium constant  $K_p = 106$  at 1023 K. Estimate the value of  $K_p$  at 1218 K ( $R = 8.314 \text{ J/mol K}$ ).

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,  $\text{COCl}_2$ , 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**

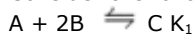
If the system  $3\text{H}_2(\text{g}) + \text{N}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$  is at equilibrium and more  $\text{N}_2$  is added, a net reaction that consumes some of the added  $\text{N}_2$  will occur until a new equilibrium is reached.

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  $\text{HPO}_4^{2-}$  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. $\text{H}_2\text{O}$			

b.  $\text{HCO}_3^-$

c.  $\text{H}_2\text{CO}_3$

d.  $\text{PO}_4^{3-}$

e. None of these choices is correct.

Score: 5/5

**19. 015 Chapter #048**

At  $35^\circ\text{C}$ , 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  $\text{Cl}_2$  and  $\text{NOCl}$ :  $[\text{Cl}_2] = 1.2 \times 10^{-2}$  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. $1.0 \times 10^{-4}$ M			
b. $1.0 \times 10^{-2}$ M			
c. $2.8 \times 10^{-1}$ M			
d. $2.4 \times 10^{-2}$ M			
e. $1.6 \times 10^{-3}$ 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  $\text{NH}_4\text{Cl}$ , 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