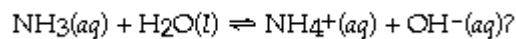




What are the conjugate acid-base pairs in the following chemical reaction



- $\text{NH}_3, \text{OH}^-$  and  $\text{H}_2\text{O}, \text{NH}_4^+$
- $\text{NH}_3, \text{H}_2\text{O}$  and  $\text{NH}_4^+, \text{OH}^-$
- $\text{NH}_3, \text{NH}_4^+$  and  $\text{H}_2\text{O}, \text{OH}^-$
- $\text{NH}_3$  and  $\text{NH}_4^+$

Question 5

0.5 points Save

Calculate the hydroxide ion concentration in an aqueous solution that contains  $4.0 \times 10^{-4} \text{ M}$  in hydronium ion.

- $4.0 \times 10^{-10} \text{ M}$
- $2.5 \times 10^{-11} \text{ M}$
- $5.0 \times 10^{-11} \text{ M}$
- $2.5 \times 10^{-9} \text{ M}$

Question 6

0.5 points Save

What is the hydronium ion concentration of an acid rain sample that has a pH of 3.15?

- 11 M
- $1.4 \times 10^{-11} \text{ M}$
- 3.2 M
- $7.1 \times 10^{-4} \text{ M}$

Question 7

0.5 points Save

If the ionization constant of water,  $K_w$ , at  $40^\circ \text{C}$  is  $2.92 \times 10^{-14}$  then what is the hydronium ion concentration for a neutral solution?

- $[\text{H}_3\text{O}^+] < 1.71 \times 10^{-7} \text{ M}$
- $[\text{H}_3\text{O}^+] > 1.71 \times 10^{-7} \text{ M}$
- $[\text{H}_3\text{O}^+] = 1.71 \times 10^{-7} \text{ M}$
- $[\text{H}_3\text{O}^+] > 1.00 \times 10^{-7} \text{ M}$

Question 8

1 points Save

What is the hydroxide ion concentration of a lye solution that has a pH of 11.20?

- 2.8 M
- $1.6 \times 10^{-3} \text{ M}$
- $6.3 \times 10^{-12} \text{ M}$

11.20 M

Question 9

0.5 points Save

Determine the acid dissociation constant for a 0.20 M hypobromous acid solution that has a pH of 4.70. Hypobromous acid is a weak monoprotic acid and the equilibrium equation of interest is:  $\text{HOBr}(aq) + \text{H}_2\text{O}(l) \rightleftharpoons \text{H}_3\text{O}^+(aq) + \text{OBr}^-(aq)$

- $2.0 \times 10^{-9}$
- $2.2 \times 10^{-12}$
- $2.0 \times 10^{-5}$
- $4.5 \times 10^{-3}$

Question 10

1 points Save

Methylamine  $\text{CH}_3\text{NH}_2$ , has a base dissociation constant of  $3.7 \times 10^{-4}$ . What is the conjugate acid of methylamine and what is its acid dissociation constant?

- $\text{CH}_3\text{NH}_3^+$ ,  $2.7 \times 10^3$
- $\text{CH}_3\text{NH}_3^+$ ,  $3.7 \times 10^{-4}$
- $\text{CH}_3\text{NH}_2^-$ ,  $2.7 \times 10^{-11}$
- $\text{CH}_3\text{NH}_3^+$ ,  $2.7 \times 10^{-11}$

Question 11

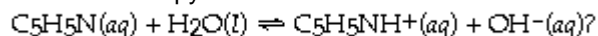
1 points Save

Para-Aminobenzoic acid (PABA),  $p\text{-H}_2\text{NC}_6\text{H}_4(\text{COOH})$ , is used in some sunscreens and hair conditioning products. Calculate the pH of an aqueous solution with  $[\text{PABA}] = 0.30 \text{ M}$  and  $K_a = 2.2 \times 10^{-5}$ .

Question 12

1 points Save

What is the pH of a 0.030 M pyridine solution that has a  $K_b = 1.9 \times 10^{-9}$ ? The equation for the dissociation of pyridine is



Question 13

1 points Save

Calculate the pH of a 0.300 M solution of methylammonium chloride,  $\text{CH}_3\text{NH}_3\text{Cl}$ . The  $K_b$  for methylamine,  $\text{CH}_3\text{NH}_2$ , is  $3.7 \times 10^{-4}$ .

Question 14

0.5 points Save

Equal volumes of 0.10 M  $\text{NH}_3$  ( $K_b = 1.8 \times 10^{-5}$ ) and 0.10 M  $\text{HF}$  ( $K_a = 3.5 \times 10^{-4}$ ) are mixed together. Will the resulting solution be acidic, basic, or neutral?

- acidic
- neutral
- insufficient information to solve

- basic

Question 15

0.5 points Save

Identify the set that contains only Lewis acids, and no Lewis bases.

- $\text{BH}_3, \text{BF}_3, \text{Cu}^{2+}, \text{CO}_2$
- $\text{CH}_3^-, \text{NH}_2^-, \text{OH}^-, \text{F}^-$
- $\text{H}_3\text{PO}_4, \text{H}_2\text{PO}_4^-, \text{HPO}_4^{2-}, \text{PO}_4^{3-}$
- $\text{Cl}^-, \text{OH}^-, \text{NH}_3, \text{H}_2\text{O}$