Question 1 0.5 points Save

What is the weakest acid among the following?

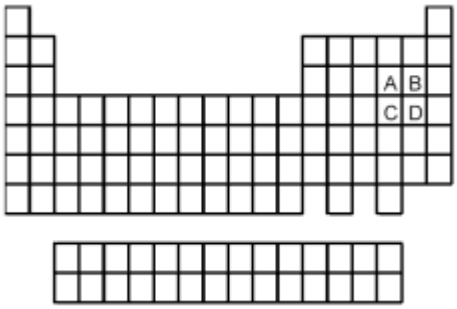
- HClO
- H_2O
- $HClO_3$
- $HClO_2$

Question 2 0.5 points Save

What is the strongest acid among the following?

- $HClO_3$
- HCN
- H_2O
- HF

Question 3 0.5 points Save



Of the elements indicated on the periodic table shown above, which forms the strongest oxoacid acid with the formula H_2XO_3 or HXO_3, where X=A,B,C or D

- A
- B
- C
- D

Question 4 0.5 points Save

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

$NH_3(aq) + H_2O(l) \rightleftharpoons NH_4^+(aq) + OH^-(aq)$?

- NH_3, OH^- and H_2O, NH_4^+
- NH_3, H_2O and NH_4^+, OH^-
- NH_3, NH_4^+ and H_2O, OH^-
- NH_3 and NH_4^+

Question 5 0.5 points Save

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

- 4.0×10^{-10} M
- 2.5×10^{-11} M
- 5.0×10^{-11} M
- 2.5×10^{-9} 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
- 1.4×10^{-11} M
- 3.2 M
- 7.1×10^{-4} M

Question 7 0.5 points Save

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

- $[H_3O^+] < 1.71 \times 10^{-7}$ M
- $[H_3O^+] > 1.71 \times 10^{-7}$ M
- $[H_3O^+] = 1.71 \times 10^{-7}$ M
- $[H_3O^+] > 1.00 \times 10^{-7}$ 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
- 1.6×10^{-3} M
- 6.3×10^{-12} 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: $HOBr(aq) + H_2O(l) <==> H_3O^+(aq) + OBr^-(aq)$

- 2.0×10^{-9}
- 2.2×10^{-12}
- 2.0×10^{-5}
- 4.5×10^{-3}

Question 10 — 1 points — Save

Methylamine CH_3NH_2, has a base dissociation constant of 3.7×10^{-4}. What is the conjugate acid of methylamine and what is its acid dissociation constant?

- $CH_3NH_3^+$, 2.7×10^{3}
- $CH_3NH_3^+$, 3.7×10^{-4}
- $CH_3NH_2^-$, 2.7×10^{-11}
- $CH_3NH_3^+$, 2.7×10^{-11}

Question 11 — 1 points — Save

Para-Aminobenzoic acid (PABA), $p\text{-}H_2NC_6H_4(COOH)$, is used in some sunscreens and hair conditioning products. Calculate the pH of an aqueous solution with [PABA] = 0.30 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

$$C_5H_5N(aq) + H_2O(l) \rightleftharpoons C_5H_5NH^+(aq) + OH^-(aq)?$$

Question 13 — 1 points — Save

Calculate the pH of a 0.300 M solution of methylammonium chloride, CH_3NH_3Cl. The K_b for methylamine, CH_3NH_2, is 3.7×10^{-4}.

Question 14 — 0.5 points — Save

Equal volumes of 0.10 M NH_3 ($K_b = 1.8 \times 10^{-5}$) and 0.10 M 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.

- BH_3, BF_3, Cu^{2+}, CO_2
- CH_3^-, NH_2^-, OH^-, F^-
- H_3PO_4, $H_2PO_4^-$, HPO_4^{2-}, PO_4^{3-}
- Cl^-, OH^-, NH_3, H_2O