

Unit 5 Review

1. A certain weak base, B^{1-} , has a K_b of 1×10^{-8} . A buffer prepared by mixing equal amounts of B^{1-} and HB has a pH of ____?

A) 5.0 C) 7.0
B) 6.0 D) 8.0

2. A certain weak acid, HA, has a $K_a = 1 \times 10^{-5}$. A buffer is prepared with $[H^{1+}] = 1 \times 10^{-5}$ M. How many mL of 1.0 M HA would have to be added to 100 mL of 1.0 M NaA to make the buffer?

A) 2 C) 100
B) 50 D) 150

3. Which of the following pairs of compounds, when dissolved in water, would constitute a buffer?

A) HF + $HC_2H_3O_2$ C) NaCl + NH_4Cl
B) NaF + NH_3 D) NH_3 + NH_4Cl

4. For each of the following 1.0 M solutions, which would have the highest pH?

A) potassium hydroxide C) sodium nitrate
B) ammonia D) nitric acid

5. In which of the following 1.0 M solutions is the $[H^+]$ the largest?

A) sodium hydroxide C) lithium nitrate
B) ammonium iodide D) sulfuric acid

6. Which one of the following should give a neutral water solution?

A) zinc nitrate C) ammonium perchlorate
B) potassium chloride D) sodium fluoride

7. In a certain solution the $[OH^-]$ is 1×10^{-10} M. The pH is

A) - 10 C) 4
B) - 4 D) 10

8. Which of these indicators would be the best for the titration of a weak base, ammonia, with a strong acid, nitric acid?

A) methyl red (color change around pH 5)
B) bromothymol blue (color change around pH 7)
C) phenolphthalein (color change around pH 9)
D) None of these is suitable.

9. Which of the following salts form an acidic solution?

A) calcium fluoride C) sodium nitrite
B) barium perchlorate D) zinc sulfate

10. The conjugate acid of CH_3NH_2

A) NH_3 C) $CH_3NH_3^{1+}$
B) CH_3NH^{1-} D) $CH_3NH_4^{2+}$