Assessment

Chemistry: Lesson 18

Question 1

What is the conjugate acid of HCO_3^-?

A. H_3O^+

B. H_2O

C. CO_3^{2-}

D. OH^-

E. H_2CO_3

Question 2

What is the conjugate base of $H_2PO_4^-$?

A. HPO_4^{2-}

B. PO_4^{3-}

C. H_3PO_4

D. H_3O^+

E. OH^-

Question 3

Which of the following is **not** a conjugate acid-base pair?

A. NH_4^+/NH_3

B. H_3O^+/OH^-

C. H_2SO_3/HSO_3^-

D. $C_2H_3O_2^-/HC_2H_3O_2$

E. All of the above are conjugate acid-base pairs

Question 4

Which pair is **not** a conjugate acid-base pair?

A. $(CH_3)_3N$; $(CH_3)_3NH^+$

B. H_2SO_4; H_2SO_3

C. HNO_2; NO_2^-

D. H_3O^+; H_2O

Question 5

Identify a triprotic acid.

A. CH_3COOH

B. H_3PO_4

C. H_2SO_3

D. $HClO_4$

E. H_2SO_4

Question 6

Calculate the pH of a solution that contains 3.9×10^{-4} M H_3O^+ at 25°C.

A. 4.59

B. 3.41

C. 10.59

D. 9.41

E. 0.59

Question 7

Calculate the pH of a solution that contains 2.4×10^{-5} M H_3O^+ at 25°C.

A. 2.40

B. 9.38

C. 4.62

D. 11.60

E. 4.17

Question 8

Calculate the hydronium ion concentration in an aqueous solution with a pH of 9.85 at 25°C.

A. 7.1×10^{-5} M

B. 4.2×10^{-10} M

C. 8.7×10^{-10} M

D. 6.5×10^{-5} M

E. 1.4×10^{-10} M

Question 9

Calculate the pH of a solution that contains 7.8×10^{-6} M OH^- at 25°C.

A. 1.28

B. 5.11

C. 12.72

D. 8.89

E. 9.64

Question 10

Calculate the pH for an aqueous solution of acetic acid that contains 2.15×10^{-3} M hydronium ion.

A. 4.65×10^{-12} M

B. 2.15×10^{-3} M

C. 2.67

D. 11.33

Question 11

Calculate the pH for an aqueous solution of pyridine that contains 2.15×10^{-4} M hydroxide ion.

A. 4.65×10^{-11}

B. 2.15×10^{-4}

C. 3.67

D. 10.33

Question 12

What is the hydronium ion concentration of an acid rain sample that has a pH of 3.45?

A. 2.82×10^{-11} M

B. 3.55×10^{-4} M

C. 3.45 M

D. 10.55 M

Question 13

What is the hydroxide ion concentration of a lye solution that has a pH of 9.20?

A. 6.31×10^{-10} M

B. 1.58×10^{-5} M

C. 4.80 M

D. 9.20 M

Question 14

A Lewis base is _____.

A. an electron pair donor

B. an electron pair acceptor

C. a proton donor

D. proton acceptor