# Chem.G11-Q3W2-Acids and bases- H.W

**Multiple Choice** *Identify the choice that best completes the statement or answers the question.* 

 1.	An example of a polyprotic acid is a. HCl	C.	HCN
2	$\mathbf{D}_{2} \mathbf{D}_{4}$	u.	$\Pi C_2 \Pi_3 O_2$
 2.	Acids produce in order to conduct electr	icity	$^{\prime}$ in water.
	a. H	С. Л	
2		u.	
 3.	The top industrial chemical produced in the Un	ited	States for many years has been
	a. oxygen	С.	ammonia
	b. hydrochloric acid	a.	sulturic acid
 4.	One physical property of acids is a		
	a. presence of hydrogen	с.	pink color
	b. slippery feel	d.	sour taste
 5.	A piece of blue litmus paper placed into water	thro	ugh which carbon dioxide gas is bubbled will
	a. remain blue	c.	lose its color
	b. turn pink	d.	show no change
 6.	The weak acid in the following list is		
	a. sulfuric acid	c.	acetic acid
	b. nitric acid	d.	hydrochloric acid
 7.	Oxides of nitrogen and sulfur are		
	a. acids	c.	basic anhydrides
	b. bases	d.	acidic anhydrides
 8.	Ammonia is considered to be a base because it		
	a. loses hydroxide ions in water	c.	contains hydrogen
	b. contains the hydroxide ion	d.	accepts hydrogen ions
 9.	An acidic solution would have a pH of		
	a. 7 or above	c.	more than 7
	b. less than 7	d.	7 or below
 10.	Conductivity of an acid or a base in water is aff	fecte	ed by all of the following except
	a. pH	c.	strength
	b. an indicator	d.	molarity
 11.	Acids react with carbonates to produce		
	a. a hydronium ion	c.	hydrogen
	b. carbon dioxide	d.	a base

**Completion** *Complete each statement.* 

- A. Ph
- B. ionization
- C. hydronium ion
- D. acid
- E. base
- F. strong acid
- G. strong base
- H. weak acid
- I. weak base
- J. acidic anhydrides
- K. basic anhydride
- L. neutralization reaction
- 12. A(n) \_\_\_\_\_\_ is a substance that produces hydroxide ions in water.
- 13. An acid that ionizes to only a slight degree in water is a(n) \_\_\_\_\_\_.
- 14. A(n) \_\_\_\_\_\_ is another name for a metallic oxide.
- 15. A base that dissociates completely in water solution is known as a(n) \_\_\_\_\_\_.
- 16. A substance that produces hydronium ions when it dissolves in water is said to be a(n) \_\_\_\_\_\_
- 17. \_\_\_\_\_ is a mathematical scale by which the concentration of hydronium ions in solution is expressed.
- 18. A(n) \_\_\_\_\_\_ is a base that does not ionize to a very great extent in water.
- 19. The reaction between an acid and a base is a(n) \_\_\_\_\_\_.
- 20. The combination of a water molecule and a hydrogen ion is a(n) \_\_\_\_\_\_.
- 21. During the process known as \_\_\_\_\_\_, a covalent compound breaks apart into ions.
- 22. A(n) \_\_\_\_\_\_ is an acid that dissociates completely in water solution.
- 23. Nonmetal oxides are called \_\_\_\_\_\_ because they react with water to form acids.

#### Matching

The graph in Figure 14-1 shows data collected when the probe of a pH meter was inserted into each of seven beakers containing the solutions described below. Match each of the solutions with a correct graph line.





- 24. 10 mL of 1*M* NaOH is added to 10 mL of 1*M* HCl a few drops at a time.
- \_\_\_\_\_ 25. Pellets of sodium hydroxide are dissolved in distilled water.
- \_\_\_\_\_ 26. Hydrogen chloride gas is slowly bubbled into distilled water.
- \_\_\_\_\_ 27. Carbon dioxide gas is slowly bubbled into distilled water.
- \_\_\_\_\_ 28. Ammonia gas is slowly bubbled into distilled water.
- \_\_\_\_\_ 29. 10 mL of 1*M* acetic acid is added to 10 mL of 1*M* sodium hydroxide a few drops at a time.
- \_\_\_\_\_ 30. 1 mL of 1*M* HCl is added to 1*M* acetic acid a few drops at a time.

Match each of the following equations with the letter that tells what the pH of the final solutions that form would be.

- a. low (about 1-2)
- b. moderately low (about 5-6)
- c. neutral (7)

d. moderately high (about 8-9)e. high (about 13-14)

- $\_$  31. H<sub>2</sub>O  $\rightarrow$
- $\_$  32. H<sub>2</sub>O + CO<sub>2</sub>  $\rightarrow$
- $\_$  33. NH<sub>3</sub> + H<sub>2</sub>O  $\rightarrow$
- \_\_\_\_ 34. NaOH + H<sub>2</sub>O →
- 35. NaOH + HCl  $\rightarrow$
- $\_$  36. HCl + H<sub>2</sub>O  $\rightarrow$

### Problem 1

	Compound	Degree ofionization
А	$HC_2O_3O_2$	2%
В	RbOH	100%
С	HCN	<5%
D	H <sub>2</sub> O	10 <sup>-5</sup> %

This table summarizes some properties of some compounds.

# Match the suitable compound A,B,C, or D from the above

	Acid or base	Strong or weak	Ionization equation	A,B,C,or D
37	acid	weak	$\rm HCN + \rm H_2O \rightarrow \rm H_3O^+ + \rm CN^-$	
38	acid	weak	$HC_2H_3O_2 + H_2O \rightarrow H_3O^+ + C_2H_3O_2^-$	
39	both	weak	$H_2O + H_2O \rightarrow H_3O^+ + OH^-$	
40	base	strong	$RbOH \rightarrow Rb^+ + OH^-$	

#### Problem 2

This table summarizes some properties of some compounds.

А	H <sub>3</sub> PO <sub>4</sub>	<5%
В	CH <sub>3</sub> NH <sub>2</sub>	0.01%
С	KNO <sub>3</sub>	100%
D	HFO <sub>4</sub>	100%

# Match the suitable compound A,B,C, or D from the above

	Acid or base	Strong or weak	Ionization equation	A,B,C,or D
41	base	weak	$CH_3NH_2 + H_2O \rightarrow CH_3NH_3^+ + OH^-$	
42	acid	weak	$H_3PO_4 + H_2O \rightarrow H_3O^+ + H_2PO_4^-$	
43	acid	strong	$HFO_4 + H_2O \rightarrow H_3O^+ + FO_4^-$	
44	neither	N/A	$N/A (KNO_3 \rightarrow K^+ + NO_3^-)$	