

AP Chem Ch.14 Quiz A

Name:

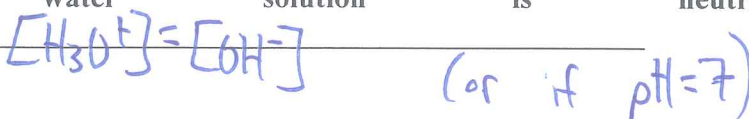
CALVIN

Date:

Hour:

- 1) $\text{pH} + \text{pOH} = 14$
- 2) $\text{pH} = -\log [\text{H}_3\text{O}^{+1}]$
- 3) $\text{pOH} = -\log [\text{OH}^{-1}]$
- 4) $K_w = [\text{H}_3\text{O}^{+1}] [\text{OH}^{-1}] = 1.00 \times 10^{-14} \text{M}^2$
- 5) $[\text{H}_3\text{O}^{+1}] = 2^{\text{nd}} \log - \text{pH}$
- 6) $[\text{OH}^{-1}] = 2^{\text{nd}} \log - \text{pOH}$

1) A water solution is neutral if



2) A strong acid and a strong base will react to form which 2 products?

Water + salt

3) Find the pOH if pH is:

- | | | |
|---|---------|------|
| N | a) 7.00 | 7 |
| A | b) 4 | 10 |
| B | c) 12 | 2 |
| A | d) 2.5 | 11.5 |
| B | e) 8.12 | 6.88 |

4) Find the pH if pOH is:

- | | | |
|---|---------|-------|
| B | a) 2 | 12 |
| B | b) 3.67 | 10.33 |
| A | c) 14 | 0 |
| B | d) 0 | 14 |
| B | e) 5.1 | 8.9 |

5) Go back and place an "A" or "B" next to each in problems 5 and 6 to indicate whether they are an acid or a base.

6) Explain the difference between "Strong" and "Concentrated" with respect to acids and bases.

↙
dissociates completely

↓
higher Molarity

12) USING the pH values from the previous problem: indicate whether each is acidic or basic by writing a CAPITAL letter to the right of each answer above.

13) Determine the pH values for the following $[\text{OH}^{-1}]$:

a) $3.14 \times 10^{-5} \text{ M}$ 9.50

b) $9.86 \times 10^{-12} \text{ M}$ 2.99

c) $4.21 \times 10^{-9} \text{ M}$ 5.62

14) Find pOH, [Hydroxide], and pH for [Hydronium] = $4.23 \times 10^{-6} \text{ M}$.

pH = 5.37 $[\text{H}_3\text{O}^+] = 4.23 \times 10^{-6} \text{ M}$

pOH = 8.63 $[\text{OH}^-] = 2.36 \times 10^{-9} \text{ M}$

15) Find pH, [Hydronium], and pOH for [Hydroxide] = $5.71 \times 10^{-2} \text{ M}$

pH = 12.8 $[\text{H}_3\text{O}^+] = 1.75 \times 10^{-13} \text{ M}$

pOH = 1.24 $[\text{OH}^-] = 5.71 \times 10^{-2} \text{ M}$

16) Find pH, $[\text{H}_3\text{O}^{+1}]$, and $[\text{OH}^{-1}]$, if pOH is 2

pH = 12 $[\text{H}_3\text{O}^+] = 1 \times 10^{-12} \text{ M}$

pOH = 2 $[\text{OH}^-] = 1 \times 10^{-2} \text{ M}$

17) Find the pOH, $[\text{H}_3\text{O}^{+1}]$, and $[\text{OH}^{-1}]$, if pH is 4.6

pH = 4.6 $[\text{H}_3\text{O}^+] = 2.51 \times 10^{-5} \text{ M}$

pOH = 9.4 $[\text{OH}^-] = 3.98 \times 10^{-10} \text{ M}$

18) Describe what an acid/base indicator is and give TWO examples.

changes color w/ pH

Reasonable ... pH paper, phenolphthalein, red cabbage juice, etc...

19) Find pH if:

a) [Hydronium] = $1.23 \times 10^{-7} \text{ M}$ 6.91

b) [Hydroxide] = $4.56 \times 10^{-12} \text{ M}$ 2.66

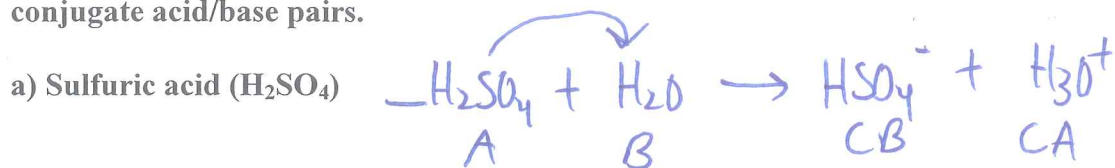
c) [Hydronium] = $7.52 \times 10^{-3} \text{ M}$ 2.12

20) Give names for the following acids:

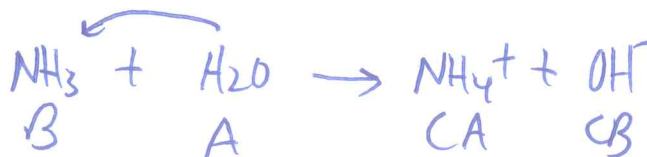
- a) HCl hydrochloric acid
b) H₂SO₄ sulfuric acid
c) H₃PO₄ phosphoric acid

21) Vinegar is the common name for what acid? acetic acid

22) Write out the reaction between water and _____. Label the acid/base and conjugate acid/base pairs.



b) Ammonia (NH₃)



23) List TWO foods you have tasted that are:

a) Acids (sour)

b) Bases (bitter)

Reasonable

Go VIKINGS!!!

AP Chem Ch.14 Quiz B

Circle best answer

- 1) Arrhenius acids increase the (Hydronium, Hydroxide) concentration.
- 2) Bronsted-Lowry (acids, bases) act as proton donors.
- 3) Bronsted-Lowry (acids, bases) act as proton acceptors.
- 4) Lewis acids (accept, donate) electron pairs.
- 5) Acids have a pH of (above 7, below 7).
- 6) Bases have a pH of (above 7, below 7)
- 7) A strong acid is (concentrated, dissociates completely).
- 8) A substance with a pOH of 2 will be (acidic, basic, neutral).
- 9) (phenolphthalein, universal indicator) was used in the titration lab.
- 10) (phenolphthalein, universal indicator) was used in class to make different colors in the beaker as we added "A" and "B" alternately.
- 11) The pH will be neutral when [Hydronium] is (greater than, less than, equal to) [Hydroxide]

Short Answer

12) amphoteric is the term that applies to water's ability to act as an acid or a base.

13) "pH" stands for: power of Hydronium

14) Complete chart:

	<u>Acid</u>	<u>Base</u>
Arrhenius	increase $[H_3O^+]$	increase $[OH^-]$
Bronsted-Lowry	proton donor	proton acceptor
Lewis	EP acceptor	EP donor

15) Write down the quote of the day OR word of the day from yesterday.

Resumable

16) Find the pH, pOH and Hydronium of $3.72 \times 10^{-12} \text{M}$ [Hydroxide]

$$\text{pH} = 2.57$$

$$[\text{H}_3\text{O}^+] = 2.69 \times 10^{-3} \text{M}$$

$$\text{pOH} = 11.4$$

$$[\text{OH}^-] = 3.72 \times 10^{-12} \text{M}$$

17) Write four facts about:
Acids

Bases

Reasonable

18) Determine [Hydronium] if pOH is 9.12. Is this an acid or base?

$$\text{pH} = 4.88$$

$$[\text{H}_3\text{O}^+] = 1.32 \times 10^{-5} \text{M}$$

$$\text{pOH} = 9.12$$

$$[\text{OH}^-] = 7.59 \times 10^{-10} \text{M}$$

Acid

19) Determine the pOH, Hydroxide and pH if the [Hydronium] is $3.4 \times 10^{-3} \text{M}$

$$\text{pH} = 2.47$$

$$[\text{H}_3\text{O}^+] = 3.4 \times 10^{-3} \text{M}$$

$$\text{pOH} = 11.5$$

$$[\text{OH}^-] = 2.94 \times 10^{-12} \text{M}$$

Bonus:

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Reasonable