

## Unit 10 – Acids & Bases Twitter Review Questions

U10-1: What is true about the equivalence point of a titration? (Be very specific)

- Answer: moles  $H^+$  (acid) = moles  $OH^-$  (base)

U10-2: Determine if TRUE or FALSE about hydrobromic acid (HBr):

A) Strong Acid?

B) Weak Acid?

C) Arrhenius Acid?

D) Bronsted-Lowry Acid?

- Answer: A) True    B) False    C) True    D) True

\* If Arrhenius Acid, then automatically Bronsted-Lowry Acid

U10-3: Which of the following is a weak acid? HBr / HI /  $HNO_2$  /  $HClO_3$

- Answer:  $HNO_2$

U10-4: Which of the following is NOT a strong base? NaOH /  $Al(OH)_3$  / RbOH /  $Ba(OH)_2$

- Answer:  $Al(OH)_3$

U10-5: Identify three (3) properties of an acid.

A)

B)

C)

- Answer: A) Sour taste    B) Electrolyte    C) Contain hydrogen cation  
D) Produces  $H^+$  in solution    E)  $pH < 7$     F) Neutralized with base

U10-6: Water is an amphoteric substance. What does this mean? (Be very specific)

- Answer: Water can both donate and accept protons ( $H^+$ )

U10-7: What is true about the pH value of a substance that indicates the highest (strongest) level of acidity?

- Answer: pH value closest to zero (0)

U10-8: Arrhenius acids are also classified as a B-L acid. However, what characteristic of a B-L acid does NOT classify it as Arrhenius acid?

- Answer: Proton ( $H^+$ ) donor

U10-9: Predict the products of the following acid-base neutralization reaction (no need to balance):  $\text{HF} + \text{Ca}(\text{OH})_2 \rightarrow$

- Answer:  $\text{HF} + \text{Ca}(\text{OH})_2 \rightarrow \text{CaF}_2 + \text{H}_2\text{O}$

U10-10: What STRENGTH of bases is completely ionized in solution?

- Answer: Completely ionized = 100% dissociation  $\rightarrow$  Strong Bases

U10-11: Litmus/pH paper is dipped into a solution. The Litmus/pH paper turns blue. What is the identity of this solution, acid or base?

- Answer: Blue = BASE

U10-12: What is one unique property of a strong acid over a weak acid.

- Answer: Strong acids dissociate/ionize completely (100%) in solution

U10-13:

A) Is ammonia ( $\text{NH}_3$ ) an acid or a base?

B) Explain why.

- Answer: A) Base                      B) Produces  $\text{OH}^-$  in solution

U10-14: A strong acid is titrated with weak base. Would you expect the resulting solution equivalence point be at  $\text{pH}=7$ , above 7, or below 7?

- Answer: Below pH 7

U10-15: Match an acid and base to its conjugates.

- Answer: A  $\rightarrow$  CB ; B  $\rightarrow$  CA

U10-16: In order to determine if a substance/solution is acidic, basic, or neutral, what must you calculate for?

- Answer: pH

U10-17: A) Phenolphthalein in an acid is what color? B) In a base?

- Answer: A) Colorless              B) Pink

U10-18: Blue Litmus paper dipped into an acidic solution will turn what color?

- Answer: Red

U10-19: The equivalence point of a titration is also referred to as the point of \_\_\_\_\_.

- Answer: Neutralization

U10-20: Provide the nomenclature of the following:

- A) H<sub>3</sub>PO<sub>3</sub>
- B) HNO<sub>4</sub>
- C) H<sub>2</sub>S
- D) HClO<sub>3</sub>

- Answer: A) Phosphorous Acid    B) Pernitric Acid    C) Hydrosulfuric Acid  
D) Chloric Acid

U10-21: Provide the nomenclature of the following:

- A) Hydrobromic Acid
- B) Sulfurous Acid
- C) Perchloric Acid
- D) Nitric Acid

- Answer: A) HBr    B) H<sub>2</sub>SO<sub>3</sub>    C) HClO<sub>4</sub>    D) HNO<sub>3</sub>

U10-22: Identify (A,B) in reactants and their matching conjugates (CB,CA) for the following: (1) HC<sub>2</sub>H<sub>3</sub>O<sub>2</sub> + (2) OH<sup>-</sup> → (3) H<sub>2</sub>O + (4) C<sub>2</sub>H<sub>3</sub>O<sub>2</sub><sup>-</sup>

- Answer: (1) A    (2) B    (3) CA    (4) CB

U10-23: Identify (A,B) in reactants and their matching conjugates (CB,CA) for the following: (1) NH<sub>3</sub> + (2) H<sub>2</sub>O → (3) NH<sub>4</sub><sup>+</sup> + (4) OH<sup>-</sup>

- Answer: (1) B    (2) A    (3) CA    (4) CB

U10-24: What is the pH of a 0.0500M NaOH solution?

- Answer: pH = 12.7

U10-25:

- A) The pOH of a solution is 10.5. What is the [OH<sup>-</sup>] of the solution?
- B) Is solution acidic, basic, or neutral?

- Answer: A) [OH<sup>-</sup>] = 3.16 X 10<sup>-11</sup> M    B) pH=3.5 → Acidic

U10-26: A crushed tomato, an acidic fruit, is found to have a concentration of 6.2 x 10<sup>-5</sup> M. What is the pH of the tomato?

- Answer: pH = 4.2

U10-27:

A) What is the  $[H^+]$  of canned peaches if its  $[OH^-]$  is  $3.16 \times 10^{-11} M$ ?

B) Are peaches acidic, basic, or neutral?

- Answer: A)  $[H^+] = 3.16 \times 10^{-4} M$       B) Acidic

U10-28: What is the pOH of sour dill pickles if its  $[OH^-] = 1.6 \times 10^{-10} M$ ?

- Answer: A) pOH = 9.8

U10-29: 50.mL HBr soln is added to flask with phenolphthalein. When 30.mL of 0.50M NaOH is added, soln is neutralized. Write a balanced eqn.

- Answer: A)  $1 HBr + 1 NaOH \rightarrow 1 NaBr + 1 H_2O$

U10-30: Refer to conditions in #29 - How many moles of NaOH were added?

- Answer:  $mol_B = (M_B)(L_B) \rightarrow mol_B = 0.015 \text{ mol NaOH}$

U10-31: Refer to conditions in #29 - How many moles of HBr were present originally?

- Answer: At EQ Point :  $mol_A = mol_B \rightarrow mol_A = 0.015 \text{ mol HBr}$

U10-32: Refer to conditions in #29 - What was the concentration of original HBr solution?

- Answer:  $M_A = 0.30 M HBr$

U10-33: Refer to conditions in #29 - Was the pH at the equivalence point above, below, or equal to 7?

- Answer:  $SA + SB = \text{Neutral} \rightarrow \text{At pH } 7$

U10-34: Explain how you would determine the pH of the Equivalence Point (EQ Point) on a titration curve.

- Answer: The EQ Point on a titration curve is determined by finding the "midpoint" of the titration curve and reading over to the left of the "y-axis" to determine its proper pH value

U10-35: Explain how you would determine the volume (mL) of the titrant (vol of known conc) at EQ Point on a titration curve.

- Answer: The EQ Point on a titration curve is determined by finding the "midpoint" of the titration curve and reading down to the "x-axis" to determine its proper volume (mL)