

Circle the best answer from the answer choices. (2 points each)

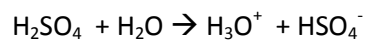
1. Describe the taste of an acid?
2. Describe the taste of a base?
3. A base is characterized by a _____ feel.
4. pH is what type of mathematical expression?
5. What base is used in the mathematical expression of pH?
6. Describe 2 different ways to determine if a solution is an acid.
7. Describe 2 different ways to determine if a solution is a base.
8. Give three examples of conjugate acid/base pairs.

Answer the following in a word, phrase or sentence. (4 points each)

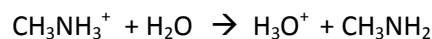
9. How did Arrhenius define an Acid and a Base?
 - a. Acid-
 - b. Base-
10. How did Bronsted-Lowry define an Acid and a Base?
 - a. Acid-
 - b. Base-

Answer the following in a word, phrase or sentence. (3 points each)

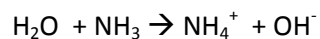
11. Using the Bronsted-Lowry Model, identify the Acid and Base in this equation:



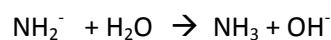
12. Using the Bronsted-Lowry Model, identify the Conjugate Acid and Conjugate Base in this equation:



13. Using the Bronsted-Lowry Model, identify the Acid and Base in this equation:



14. Using the Bronsted-Lowry Model, identify the Conjugate Acid and Conjugate Base in this equation:



15. Write the conjugate acid for NO_3^- .

16. Write the conjugate base for $\text{HC}_2\text{H}_3\text{O}_2$.

17. Write the conjugate acid for PO_4^{3-} .

18. Write the conjugate base for NH_3 .

19. What does it mean for a substance to be AMPHOTERIC?

20. Give an example of an amphoteric substance.

21. What does it mean for a substance to be a STRONG acid or base?
22. Why is the Bronsted-Lowry Model of acids more applicable in higher Chemistry than the Arrhenius Model? (what is the "problem" with the Arrhenius model?)
23. A solution labeled: 2.5 M HCl (a strong acid), actually contains what in solution?
24. A solution labeled: 2.5 M Ba(OH)₂ (a strong base), actually contains what in solution?
25. Complete this statement: as pH increases, hydrogen ion concentration _____.
26. Complete this statement: as pH increases, hydroxide ion concentration _____.

The following are math related problems (6 points each)

27. If the $[\text{OH}^-] = 0.2 \text{ M}$ what is the $[\text{H}^+]$ in the solution? Is the solution Acidic, Basic or Neutral?
28. If the $[\text{H}^+] = 0.0000001 \text{ M}$ what is the $[\text{OH}^-]$ in the solution? Is the solution Acidic, Basic or Neutral?
29. If the $[\text{H}^+] = 0.5 \text{ M}$ what is the $[\text{OH}^-]$ in the solution? Is the solution Acidic, Basic or Neutral?
30. What is the pH of a solution with a $[\text{H}^+] = 1 \times 10^{-9} \text{ M}$? Is the solution Acidic, Basic or Neutral?

31. What is the pOH of a solution with a $[\text{OH}^-] = 1.73 \times 10^{-3} \text{ M}$? Is the solution Acidic, Basic or Neutral?

32. What is the pH of a solution with a pOH of 8.38? Is the solution Acidic, Basic or Neutral?

33. What is the pOH of a solution with a $[\text{H}^+]$ of $4.60 \times 10^{-12} \text{ M}$? Is the solution Acidic, Basic or Neutral?

34. What is the $[\text{OH}^-]$ of a solution with a pH of 2.37? Is the solution Acidic, Basic or Neutral?

35. What is the pH of a 0.83 M solution of H_2SO_4 (a strong acid)? Is the solution Acidic, Basic or Neutral?

36. If the $[\text{H}^+] = 1.9 \times 10^{-3} \text{ M}$ what is the $[\text{OH}^-]$ in the solution? Is the solution Acidic, Basic or Neutral?

37. If the $[\text{OH}^-] = 1.95 \text{ M}$ what is the $[\text{H}^+]$ in the solution? Is the solution Acidic, Basic or Neutral?

38. If the $[H^+] = 1 \times 10^{-7} M$ what is the $[OH^-]$ in the solution? Is the solution Acidic, Basic or Neutral?

39. What is the pH of a solution with a $[H^+] = 0.92 M$? Is the solution Acidic, Basic or Neutral?

40. What is the pOH of a solution with a $[OH^-] = 1.8 \times 10^{-8} M$? Is the solution Acidic, Basic or Neutral?

41. What is the pOH of a solution with a pH of 2.08? Is the solution Acidic, Basic or Neutral?

42. What is the pH of a solution with a $[OH^-]$ of $9.60 \times 10^{-5} M$? Is the solution Acidic, Basic or Neutral?

43. What is the $[H^+]$ of a solution with a pH of 12.37? Is the solution Acidic, Basic or Neutral?

44. What is the pH of a 0.12 M solution of $Ba(OH)_2$ (a strong base)? Is the solution Acidic, Basic or Neutral?