CHEM 3111 Inorganic Chemistry: Acids and bases

1. What is an acid?

A. A substance that increases the concentration of H+ ions in a solution
B. A substance that decreases the concentration of H+ ions in a solution
C. A substance that increases the concentration of OH- ions in a solution
D. A substance that decreases the concentration of OH- ions in a solution

2. What is a base?

A. A substance that increases the concentration of H+ ions in a solution
B. A substance that decreases the concentration of H+ ions in a solution
C. A substance that increases the concentration of OH- ions in a solution
D. A substance that decreases the concentration of OH- ions in a solution

3. Which of the following is an example of an acid?

A. HCl
B. NaOH
C. NH3
D. H2O

4. Which of the following is an example of a base?

A. HCl
B. NaOH
C. NH3
D. H2O

5. What is the pH of a solution with a [H+] of 1 x 10-7 M?

A. 7
B. 6
C. 5
D. 4

6. What is the pH of a solution with a [H+] of 1 x 10-3 M?

A. 3
B. 2
C. 1
D. 0

7. What is the pH of a solution with a [H+] of 1 x 10-11 M?

A. 11
B. 10
C. 9
D. 8

8. What is the pH of a solution with a [H+] of 1 x 10-5 M?

A. 5
B. 4
C. 3
D. 2

9. What is the pH of a solution with a [OH-] of 1 x 10-7 M?

A. 7
B. 6
C. 5
D. 4

10. What is the pH of a solution with a [OH-] of 1 x 10-3 M?

A. 3
B. 2
C. 1
D. 0

11. What is the pH of a solution with a [OH-] of 1 x 10-11 M?

A. 11
B. 10
C. 9
D. 8

12. What is the pH of a solution with a [OH-] of 1 x 10-5 M?

A. 5
B. 4
C. 3
D. 2

13. What is the pOH of a solution with a [H+] of 1 x 10-7 M?

A. 7
B. 6
C. 5
D. 4

14. What is the pOH of a solution with a [H+] of 1 x 10-3 M?

A. 3
B. 2
C. 1
D. 0

15. What is the pOH of a solution with a [H+] of 1 x 10-11 M?

A. 11
B. 10
C. 9
D. 8

16. What is the pOH of a solution with a [H+] of 1 x 10-5 M?

A. 5
B. 4
C. 3
D. 2

17. What is the pOH of a solution with a [OH-] of 1 x 10-7 M?

A. 7
B. 6

C. 5
D. 4

18. What is the pOH of a solution with a [OH-] of 1 x 10-3 M?

A. 3
B. 2
C. 1
D. 0

19. What is the pOH of a solution with a [OH-] of 1 x 10-11 M?

A. 11
B. 10
C. 9
D. 8

20. What is the pOH of a solution with a [OH-] of 1 x 10-5 M?

A. 5
B. 4
C. 3
D. 2

21. What is the pH of a solution with a pOH of 7?

A. 7
B. 6
C. 5
D. 4

22. What is the pH of a solution with a pOH of 3?

A. 3
B. 2
C. 1
D. 0

23. What is the pH of a solution with a pOH of 11?

A. 11
B. 10
C. 9
D. 8

24. What is the pH of a solution with a pOH of 5?

A. 5
B. 4
C. 3
D. 2

25. What is the pOH of a solution with a pH of 7?

A. 7
B. 6
C. 5
D. 4

26. What is the pOH of a solution with a pH of 3?

A. 3
B. 2
C. 1
D. 0

27. What is the pOH of a solution with a pH of 11?

A. 11
B. 10
C. 9
D. 8

28. What is the pOH of a solution with a pH of 5?

A. 5
B. 4
C. 3
D. 2

29. What is the [H+] of a solution with a pH of 7?

A. 1 x 10-7 M
B. 1 x 10-6 M
C. 1 x 10-5 M
D. 1 x 10-4 M

30. What is the [H+] of a solution with a pH of 3?

A. 1 x 10-3 M
B. 1 x 10-2 M
C. 1 x 10-1 M
D. 1 x 100 M

31. What is the [H+] of a solution with a pH of 11?

A. 1 x 10-11 M
B. 1 x 10-10 M
C. 1 x 10-9 M
D. 1 x 10-8 M

32. What is the [H+] of a solution with a pH of 5?

A. 1 x 10-5 M
B. 1 x 10-4 M
C. 1 x 10-3 M
D. 1 x 10-2 M

33. What is the [OH-] of a solution with a pOH of 7?

A. 1 x 10-7 M
B. 1 x 10-6 M
C. 1 x 10-5 M
D. 1 x 10-4 M

34. What is the [OH-] of a solution with a pOH of 3?

A. 1 x 10-3 M
B. 1 x 10-2 M
C. 1 x 10-1 M
D. 1 x 100 M

35. What is the [OH-] of a solution with a pOH of 11?

A. 1 x 10-11 M
B. 1 x 10-10 M
C. 1 x 10-9 M
D. 1 x 10-8 M

36. What is the [OH-] of a solution with a pOH of 5?

A. 1 x 10-5 M
B. 1 x 10-4 M
C. 1 x 10-3 M
D. 1 x 10-2 M

37. What is the pH of a solution with a [OH-] of 1 x 10-7 M?

A. 7
B. 6
C. 5
D. 4

38. What is the pH of a solution with a [OH-] of 1 x 10-3 M?

A. 3
B. 2
C. 1
D. 0

39. What is the pH of a solution with a [OH-] of 1 x 10-11 M?

A. 11
B. 10
C. 9
D. 8

40. What is the pH of a solution with a [OH-] of 1 x 10-5 M?

A. 5
B. 4
C. 3
D. 2

41. What is the pOH of a solution with a [H+] of 1 x 10-7 M?

A. 7
B. 6
C. 5
D. 4

42. What is the pOH of a solution with a [H+] of 1 x 10-3 M?

A. 3
B. 2

C. 1
D. 0

43. What is the pOH of a solution with a [H+] of 1 x 10-11 M?

A. 11
B. 10
C. 9
D. 8

44. What is the pOH of a solution with a [H+] of 1 x 10-5 M?

A. 5
B. 4
C. 3
D. 2

45. What is the pH of a solution with a pOH of 7?

A. 7
B. 6
C. 5
D. 4

46. What is the pH of a solution with a pOH of 3?

A. 3
B. 2
C. 1
D. 0

47. What is the pH of a solution with a pOH of 11?

A. 11
B. 10
C. 9
D. 8

48. What is the pH of a solution with a pOH of 5?

A. 5
B. 4
C. 3
D. 2

49. What is the pOH of a solution with a pH of 7?

A. 7
B. 6
C. 5
D. 4

50. What is the pOH of a solution with a pH of 3?

A. 3
B. 2
C. 1
D. 0

51. What is the pOH of a solution with a pH of 11?

A. 11
B. 10
C. 9
D. 8

52. What is the pOH of a solution with a pH of 5?

A. 5
B. 4
C. 3
D. 2

53. What is the [H+] of a solution with a pH of 7?

A. 1 x 10-7 M
B. 1 x 10-6 M
C. 1 x 10-5 M
D. 1 x 10-4 M

54. What is the [H+] of a solution with a pH of 3?

A. 1 x 10-3 M
B. 1 x 10-2 M
C. 1 x 10-1 M
D. 1 x 100 M

55. What is the [H+] of a solution with a pH of 11?

A. 1 x 10-11 M
B. 1 x 10-10 M
C. 1 x 10-9 M
D. 1 x 10-8 M

56. What is the [H+] of a solution with a pH of 5?

A. 1 x 10-5 M
B. 1 x 10-4 M
C. 1 x 10-3 M
D. 1 x 10-2 M

57. What is the [OH-] of a solution with a pOH of 7?

A. 1 x 10-7 M
B. 1 x 10-6 M
C. 1 x 10-5 M
D. 1 x 10-4 M

58. What is the [OH-] of a solution with a pOH of 3?

A. 1 x 10-3 M
B. 1 x 10-2 M
C. 1 x 10-1 M
D. 1 x 100 M

59. What is the [OH-] of a solution with a pOH of 11?

A. 1 x 10-11 M
B. 1 x 10-10 M
C. 1 x 10-9 M
D. 1 x 10-8 M

60. What is the [OH-] of a solution with a pOH of 5?

A. 1 x 10-5 M
B. 1 x 10-4 M
C. 1 x 10-3 M
D. 1 x 10-2 M

61. What is the pH of a solution with a [OH-] of 1 x 10-7 M?

A. 7
B. 6
C. 5
D. 4

62. What is the pH of a solution with a [OH-] of 1 x 10-3 M?

A. 3
B. 2
C. 1
D. 0

63. What is the pH of a solution with a [OH-] of 1 x 10-11 M?

A. 11
B. 10
C. 9
D. 8

64. What is the pH of a solution with a [OH-] of 1 x 10-5 M?

A. 5
B. 4
C. 3
D. 2

65. What is the pOH of a solution with a [H+] of 1 x 10-7 M?

A. 7
B. 6
C. 5
D. 4

66. What is the pOH of a solution with a [H+] of 1 x 10-3 M?

A. 3
B. 2
C. 1
D. 0

67. What is the pOH of a solution with a [H+] of 1 x 10-11 M?

A. 11
B. 10

C. 9
D. 8

68. What is the pOH of a solution with a [H+] of 1 x 10-5 M?

A. 5
B. 4
C. 3
D. 2

69. What is the pH of a solution with a pOH of 7?

A. 7
B. 6
C. 5
D. 4

70. What is the pH of a solution with a pOH of 3?

A. 3
B. 2
C. 1
D. 0

71. What is the pH of a solution with a pOH of 11?

A. 11
B. 10
C. 9
D. 8

72. What is the pH of a solution with a pOH of 5?

A. 5
B. 4
C. 3
D. 2

73. What is the pOH of a solution with a pH of 7?

A. 7
B. 6
C. 5
D. 4

74. What is the pOH of a solution with a pH of 3?

A. 3
B. 2
C. 1
D. 0

75. What is the pOH of a solution with a pH of 11?

A. 11
B. 10
C. 9
D. 8

76. What is the pOH of a solution with a pH of 5?

A. 5
B. 4
C. 3
D. 2

77. What is the [H+] of a solution with a pH of 7?

A. 1 x 10-7 M
B. 1 x 10-6 M
C. 1 x 10-5 M
D. 1 x 10-4 M

78. What is the [H+] of a solution with a pH of 3?

A. 1 x 10-3 M
B. 1 x 10-2 M
C. 1 x 10-1 M
D. 1 x 100 M

79. What is the [H+] of a solution with a pH of 11?

A. 1 x 10-11 M
B. 1 x 10-10 M
C. 1 x 10-9 M
D. 1 x 10-8 M

80. What is the [H+] of a solution with a pH of 5?

A. 1 x 10-5 M
B. 1 x 10-4 M
C. 1 x 10-3 M
D. 1 x 10-2 M

81. What is the [OH-] of a solution with a pOH of 7?

A. 1 x 10-7 M
B. 1 x 10-6 M
C. 1 x 10-5 M
D. 1 x 10-4 M

82. What is the [OH-] of a solution with a pOH of 3?

A. 1 x 10-3 M
B. 1 x 10-2 M
C. 1 x 10-1 M
D. 1 x 100 M

83. What is the [OH-] of a solution with a pOH of 11?

A. 1 x 10-11 M
B. 1 x 10-10 M
C. 1 x 10-9 M
D. 1 x 10-8 M

84. What is the [OH-] of a solution with a pOH of 5?

A. 1 x 10-5 M
B. 1 x 10-4 M
C. 1 x 10-3 M
D. 1 x 10-2 M

85. What is the pH of a