

Rowley CHEM 1220 Midterm 3

Formulas

$$pH = -\log[\text{H}_3\text{O}^+]$$

$$pOH = -\log[\text{OH}^-]$$

$$pH + pOH = 14$$

$$K_a K_b = K_w$$

$$pK_a = -\log K_a$$

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

$$[\text{OH}^-] = 10^{-pOH}$$

$$[\text{H}_3\text{O}^+][\text{OH}^-] = K_w = 1.00 \times 10^{-14}$$

$$pH = pK_a + \log \frac{B}{A}$$

$$C_A V_A = C_T V_T$$

Constants

$$R = 8.314 \frac{J}{mol \cdot K}$$

$$R = 0.08206 \frac{L \cdot atm}{mol \cdot K}$$

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1 1A 1 H Hydrogen 1.008	2 2A 2 He Helium 4.003	3 3A 3 Li Lithium 6.941	4 4A 4 Be Beryllium 9.012	5 5A 5 B Boron 10.811	6 6A 6 C Carbon 12.011	7 7A 7 N Nitrogen 14.007	8 8A 8 O Oxygen 15.999	9 9A 9 F Fluorine 18.998	10 10A 10 Ne Neon 20.180
11 1A 11 Na Sodium 22.990	12 2A 12 Mg Magnesium 24.305	13 3A 13 Al Aluminum 26.982	14 4A 14 Si Silicon 28.086	15 5A 15 P Phosphorus 30.974	16 6A 16 S Sulfur 32.066	17 7A 17 Cl Chlorine 35.453	18 8A 18 Ar Argon 39.948	19 9A 19 K Potassium 39.098	20 10A 20 Ca Calcium 40.078
37 1A 37 Rb Rubidium 85.468	38 2A 38 Sr Strontium 87.62	39 3A 39 Y Yttrium 88.906	40 4A 40 Zr Zirconium 91.224	41 5A 41 Nb Niobium 92.906	42 6A 42 Mo Molybdenum 95.95	43 7A 43 Tc Technetium 98.907	44 8A 44 Ru Ruthenium 101.07	45 9A 45 Rh Rhodium 102.906	46 10A 46 Pd Palladium 106.42
55 1A 55 Cs Cesium 132.905	56 2A 56 Ba Barium 137.328	57 3A 57 La Lanthanum 138.905	58 4A 58 Hf Hafnium 178.49	59 5A 59 Ta Tantalum 180.948	60 6A 60 W Tungsten 183.84	61 7A 61 Re Rhenium 186.207	62 8A 62 Os Osmium 190.23	63 9A 63 Ir Iridium 192.217	64 10A 64 Pt Platinum 195.085
87 1A 87 Fr Francium 223.020	88 2A 88 Ra Radium 226.025	89 3A 89 Ac Actinium 227.028	90 4A 90 Rf Rutherfordium [261]	91 5A 91 Db Dubnium [262]	92 6A 92 Sg Seaborgium [266]	93 7A 93 Bh Bohrium [264]	94 8A 94 Hs Hassium [269]	95 9A 95 Mt Meitnerium [278]	96 10A 96 Ds Darmstadtium [281]
117 7A 117 Ts Tennessine [294]	118 8A 118 Og Oganesson [294]	119 9A 119 Uu Ununennium [295]	120 10A 120 Uub Unbibium [295]	121 11A 121 Uuh Untrium [295]	122 12A 122 Uub Unbium [295]	123 13A 123 Uut Untrium [295]	124 14A 124 Uuq Unquadrium [295]	125 15A 125 Uup Unpentium [295]	126 16A 126 Uuq Unsexium [295]

Lanthanide Series

58
Ce
Cerium
140.116

59
Pr
Praseodymium
140.908

60
Nd
Neodymium
144.243

61
Pm
Promethium
144.913

62
Sm
Samarium
150.36

63
Eu
Europium
151.964

64
Gd
Gadolinium
157.25

65
Tb
Terbium
158.925

66
Dy
Dysprosium
162.500

67
Ho
Holmium
164.930

68
Er
Erbium
167.259

69
Tm
Thulium
168.934

70
Yb
Ytterbium
173.055

71
Lu
Lutetium
174.967

Actinide Series

90
Th
Thorium
232.038

91
Pa
Protactinium
231.036

92
U
Uranium
238.029

93
Np
Neptunium
237.048

94
Pu
Plutonium
244.064

95
Am
Americium
243.061

96
Cm
Curium
247.070

97
Bk
Berkelium
247.070

98
Cf
Californium
251.080

99
Es
Einsteinium
[254]

100
Fm
Fermium
257.095

101
Md
Mendelevium
258.1

102
No
Nobelium
259.101

103
Lr
Lawrencium
[262]