

USEFUL CONSTANTS/EQUATIONS

$$R_H = 2.178 \times 10^{-18} \text{ J}$$

$$h = 6.626 \times 10^{-34} \text{ J}\cdot\text{sec}$$

$$c = \lambda\nu$$

$$E_n = -R_H Z^2 (1/n^2), \text{ Z = atomic number}$$

$$E = h\nu = hc/\lambda$$

$$\lambda = h/mv \quad (\text{de Broglie equation})$$

$$N = 6.022 \times 10^{23}$$

$$1 \text{ cm} = 1 \times 10^{-2} \text{ m}; \quad 1 \text{ nm} = 1 \times 10^{-9} \text{ m}$$

$$c = 2.998 \times 10^8 \text{ m/sec}$$

$$\text{Density} = \text{mass/volume}$$

$$1 \text{ kHz} = 1000 \text{ Hz} = 1000 \text{ s}^{-1}$$

$$\text{Mass \% of A} = \frac{\text{mass of A}}{\text{total mass}} \times 100$$

$$1 \text{ J} = 1 \text{ kg m}^2/\text{sec}^2$$

$$\Delta E = -R_H Z^2 \left(\frac{1}{n_2^2} - \frac{1}{n_1^2} \right)$$

$$1 \text{ mL} = 1 \text{ cm}^3$$

PERIODIC TABLE OF THE ELEMENTS

1 1A												13	14	15	16	17	18 8A		
1 H 1.008	2 2A											3A	4A	5A	6A	7A	2 He 4.003		
3 Li 6.941	4 Be 9.012											26 Fe 55.85	←Atomic number	5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
11 Na 22.99	12 Mg 24.31	3	4	5	6	7	8	9	10	11	12	13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.95		
19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.90	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.70	29 Cu 63.55	30 Zn 65.39	31 Ga 69.72	32 Ge 72.59	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80		
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc 98	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3		
55 Cs 132.9	56 Ba 137.3	57 La* 138.9	72 Hf 178.5	73 Ta 180.9	74 W 183.9	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.6	81 Tl 204.4	82 Pb 207.2	83 Bi 209.0	84 Po 209	85 At 210	86 Rn 222		
87 Fr 223	88 Ra 226	89 Ac† 227	104 Rf 261	105 Db 262	106 Sg 266	107 Bh 262	108 Hs 265	109 Mt 266	110 Ds 271	111	112								
*Lanthanides			58 Ce 140.1	59 Pr 140.9	60 Nd 144.2	61 Pm 145	62 Sm 150.4	63 Eu 152.0	64 Gd 157.3	65 Tb 158.9	66 Dy 162.5	67 Ho 164.9	68 Er 167.3	69 Tm 168.9	70 Yb 173.0	71 Lu 175.0			
†Actinides			90 Th 232.0	91 Pa 231	92 U 238	93 Np 244	94 Pu 242	95 Am 243	96 Cm 247	97 Bk 247	98 Cf 251	99 Es 252	100 Fm 257	101 Md 258	102 No 259	103 Lr 260			