

MH.2.1 The Basic Group of Elements in Periodic Table

PERIODIC TABLE FOR 8 BASIC GROUP OF ELEMENTS

GROUP I		Legend						GROUP VIII
1 H $n = 1$ $l = (1)$ $N_e = (1)$		Z = Proton Number	E = Element	n = Principle Orbital Number	l = Sub-Orbitals Number	N_e = Numbers of Electrons	2 He $n = 1$ $l = (1)$ $N_e = 2$	
GROUP II	GROUP III	GROUP IV	GROUP V	GROUP VI	GROUP VII	GROUP VIII		
3 Li $n = 2, 1$ $l = (1), (1)$ $N_e = (1)+(2)$	4 Be $n = 2, 1$ $l = (1), (1)$ $N_e = (2)+(2)$	5 B $n = 2, 1$ $l = (3), (1)$ $N_e = (3)+(2)$	6 C $n = 2, 1$ $l = (3), (1)$ $N_e = (4)+(2)$	7 N $n = 2, 1$ $l = (3), (1)$ $N_e = (5)+(2)$	8 O $n = 2, 1$ $l = (3), (1)$ $N_e = (6)+(2)$	9 F $n = 3, 2, 1$ $l = (1), (3), (1)$ $N_e = (1)+(6)+(2)$	10 Ne $n = 3, 2, 1$ $l = (1), (3), (1)$ $N_e = (2)+(6)+(2)$	
11 Na $n = 3, 2, 1$ $l = (2), (3), (1)$ $N_e = (3)+(6)+(2)$	12 Mg $n = 3, 2, 1$ $l = (2), (3), (1)$ $N_e = (4)+(6)+(2)$	13 Al $n = 3, 2, 1$ $l = (3), (3), (1)$ $N_e = (5)+(6)+(2)$	14 Si $n = 3, 2, 1$ $l = (3), (3), (1)$ $N_e = (6)+(6)+(2)$	15 P $n = 3, 2, 1$ $l = (4), (3), (1)$ $N_e = (7)+(6)+(2)$	16 S $n = 3, 2, 1$ $l = (4), (3), (1)$ $N_e = (8)+(6)+(2)$	17 Cl $n = 4, 3, 2, 1$ $l = (1), (4), (3), (1)$ $N_e = (1)+(8)+(6)+(2)$	18 Ar $n = 4, 3, 2, 1$ $l = (1), (4), (3), (1)$ $N_e = (2)+(8)+(6)+(2)$	
19 K $n = 4, 3, 2, 1$ $l = (2), (4), (3), (1)$ $N_e = (3)+(8)+(6)+(2)$	20 Ca $n = 4, 3, 2, 1$ $l = (2), (4), (3), (1)$ $N_e = (4)+(8)+(6)+(2)$	31 Ga $n = 5, 4, 3, 2, 1$ $l = (3), (5), (4), (3), (1)$ $N_e = (5)+(10)+(8)+(6)+(2)$	32 Ge $n = 5, 4, 3, 2, 1$ $l = (3), (5), (4), (3), (1)$ $N_e = (6)+(10)+(8)+(6)+(2)$	33 As $n = 5, 4, 3, 2, 1$ $l = (4), (5), (4), (3), (1)$ $N_e = (7)+(10)+(8)+(6)+(2)$	34 Se $n = 5, 4, 3, 2, 1$ $l = (4), (5), (4), (3), (1)$ $N_e = (8)+(10)+(8)+(6)+(2)$	35 Br $n = 6, 5, 4, 3, 2, 1$ $l = (1), (4), (5), (4), (3), (1)$ $N_e = (1)+(8)+(10)+(8)+(6)+(2)$	36 Kr $n = 6, 5, 4, 3, 2, 1$ $l = (1), (4), (5), (4), (3), (1)$ $N_e = (2)+(8)+(10)+(8)+(6)+(2)$	
37 Rb $n = 6, 5, 4, 3, 2, 1$ $l = (2), (4), (5), (4), (3), (1)$ $N_e = (3)+(8)+(10)+(8)+(6)+(2)$	38 Sr $n = 6, 5, 4, 3, 2, 1$ $l = (2), (4), (5), (4), (3), (1)$ $N_e = (4)+(8)+(10)+(8)+(6)+(2)$	49 In $n = 6, 5, 4, 3, 2, 1$ $l = (3), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (5)+(12)+(14)+(10)+(6)+(2)$	50 Sn $n = 6, 5, 4, 3, 2, 1$ $l = (3), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (6)+(12)+(14)+(10)+(6)+(2)$	51 Sb $n = 6, 5, 4, 3, 2, 1$ $l = (4), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (7)+(12)+(14)+(10)+(6)+(2)$	52 Te $n = 6, 5, 4, 3, 2, 1$ $l = (4), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (8)+(12)+(14)+(10)+(6)+(2)$	53 I $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (4), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (1)+(8)+(12)+(14)+(10)+(6)+(2)$	54 Xe $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (4), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(8)+(12)+(14)+(10)+(6)+(2)$	
55 Cs $n = 7, 6, 5, 4, 3, 2, 1$ $l = (2), (4), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (3), (8)+(12)+(14)+(10)+(6)+(2)$	56 Ba $n = 7, 6, 5, 4, 3, 2, 1$ $l = (2), (4), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (4)+(8)+(12)+(14)+(10)+(6)+(2)$	81 Tl $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (3), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (5)+(12)+(14)+(18)+(14)+(10)+(6)+(2)$	82 Pb $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (3), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (6)+(12)+(14)+(18)+(14)+(10)+(6)+(2)$	83 Bi $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (4), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (7)+(12)+(14)+(18)+(14)+(10)+(6)+(2)$	84 Po $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (4), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (8)+(12)+(14)+(18)+(14)+(10)+(6)+(2)$	85 At $n = 9, 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (4), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (1)+(8)+(12)+(14)+(18)+(14)+(10)+(6)+(2)$	86 Rn $n = 9, 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (4), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(8)+(12)+(14)+(18)+(14)+(10)+(6)+(2)$	

Table MH.2.1A

MH.2.2 The Transition Metals Group

PERIODIC TABLE FOR TRANSITION METALS

21 Sc $n = 4, 3, 2, 1$ $l = (3), (4), (3), (1)$ $N_e = (5)+(8)+(6)+(2)$	22 Ti $n = 4, 3, 2, 1$ $l = (3), (7), (5), (3), (1)$ $N_e = (6)+(8)+(6)+(2)$	23 V $n = 4, 3, 2, 1$ $l = (4), (3), (3), (1)$ $N_e = (7)+(8)+(6)+(2)$	24 Cr $n = 4, 3, 2, 1$ $l = (4), (4), (3), (1)$ $N_e = (8)+(8)+(6)+(2)$	25 Mn $n = 4, 3, 2, 1$ $l = (5), (4), (3), (1)$ $N_e = (9)+(8)+(6)+(2)$	26 Fe $n = 5, 4, 3, 2, 1$ $l = (1), (4), (4), (3), (1)$ $N_e = (2)+(8)+(8)+(6)+(2)$	27 Co $n = 5, 4, 3, 2, 1$ $l = (2), (4), (4), (3), (1)$ $N_e = (3)+(8)+(8)+(6)+(2)$	28 Ni $n = 5, 4, 3, 2, 1$ $l = (2), (4), (4), (3), (1)$ $N_e = (4)+(8)+(8)+(6)+(2)$	29 Cu $n = 5, 4, 3, 2, 1$ $l = (2), (5), (4), (3), (1)$ $N_e = (3)+(10)+(8)+(6)+(2)$	30 Zn $n = 5, 4, 3, 2, 1$ $l = (2), (5), (4), (3), (1)$ $N_e = (4)+(10)+(8)+(6)+(2)$
39 Y $n = 6, 5, 4, 3, 2, 1$ $l = (1), (3), (7), (5), (3), (1)$ $N_e = (2)+(5)+(14)+(10)+(6)+(2)$	40 Zr $n = 6, 5, 4, 3, 2, 1$ $l = (1), (3), (7), (5), (3), (1)$ $N_e = (2)+(6)+(14)+(10)+(6)+(2)$	41 Nb $n = 6, 5, 4, 3, 2, 1$ $l = (1), (4), (7), (5), (3), (1)$ $N_e = (2)+(7)+(14)+(10)+(6)+(2)$	42 Mo $n = 6, 5, 4, 3, 2, 1$ $l = (1), (4), (7), (5), (3), (1)$ $N_e = (2)+(8)+(14)+(10)+(6)+(2)$	43 Tc $n = 6, 5, 4, 3, 2, 1$ $l = (1), (5), (7), (5), (3), (1)$ $N_e = (2)+(9)+(14)+(10)+(6)+(2)$	44 Ru $n = 6, 5, 4, 3, 2, 1$ $l = (1), (5), (7), (5), (3), (1)$ $N_e = (2)+(10)+(14)+(10)+(6)+(2)$	45 Rh $n = 6, 5, 4, 3, 2, 1$ $l = (2), (5), (7), (5), (3), (1)$ $N_e = (3)+(10)+(14)+(10)+(6)+(2)$	46 Pd $n = 6, 5, 4, 3, 2, 1$ $l = (2), (5), (7), (5), (3), (1)$ $N_e = (4)+(10)+(14)+(10)+(6)+(2)$	47 Ag $n = 6, 5, 4, 3, 2, 1$ $l = (2), (6), (7), (5), (3), (1)$ $N_e = (3)+(12)+(14)+(10)+(6)+(2)$	48 Cd $n = 6, 5, 4, 3, 2, 1$ $l = (2), (6), (7), (5), (3), (1)$ $N_e = (4)+(12)+(14)+(10)+(6)+(2)$
71 Lu $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (3), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(5)+(14)+(18)+(14)+(10)+(6)+(2)$	72 Hf $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (3), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(6)+(14)+(18)+(14)+(10)+(6)+(2)$	73 Ta $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (4), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(7)+(14)+(18)+(14)+(10)+(6)+(2)$	74 W $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (4), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(8)+(14)+(18)+(14)+(10)+(6)+(2)$	75 Re $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (5), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(9)+(14)+(18)+(14)+(10)+(6)+(2)$	76 Os $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (5), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(10)+(14)+(18)+(14)+(10)+(6)+(2)$	77 Ir $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (2), (5), (7), (9), (7), (5), (3), (1)$ $N_e = (3)+(10)+(14)+(18)+(14)+(10)+(6)+(2)$	78 Pt $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (2), (5), (7), (9), (7), (5), (3), (1)$ $N_e = (4)+(10)+(14)+(18)+(14)+(10)+(6)+(2)$	79 Au $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (2), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (3)+(12)+(14)+(18)+(14)+(10)+(6)+(2)$	80 Hg $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (2), (6), (7), (9), (7), (5), (3), (1)$ $N_e = (4)+(12)+(14)+(18)+(14)+(10)+(6)+(2)$

Table MH.2.1B

MH.2.3 The Inner Transition Metals Group

PERIODIC TABLE FOR INNER TRANSITION METALS GROUP

57 La $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (3), (9), (7), (5), (3), (1)$ $N_e = (2)+(5)+(18)+(14)+(10)+(6)+(2)$	58 Ce $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (3), (9), (7), (5), (3), (1)$ $N_e = (2)+(6)+(18)+(14)+(10)+(6)+(2)$	59 Pr $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (4), (9), (7), (5), (3), (1)$ $N_e = (2)+(7)+(18)+(14)+(10)+(6)+(2)$	60 Nd $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (4), (9), (7), (5), (3), (1)$ $N_e = (2)+(8)+(18)+(14)+(10)+(6)+(2)$	61 Pm $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (5), (9), (7), (5), (3), (1)$ $N_e = (2)+(9)+(18)+(14)+(10)+(6)+(2)$	62 Sm $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (5), (9), (7), (5), (3), (1)$ $N_e = (2)+(10)+(18)+(14)+(10)+(6)+(2)$	63 Eu $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (6), (9), (7), (5), (3), (1)$ $N_e = (2)+(11)+(18)+(14)+(10)+(6)+(2)$
64 Gd $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (6), (9), (7), (5), (3), (1)$ $N_e = (2)+(12)+(18)+(14)+(10)+(6)+(2)$	65 Tb $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(13)+(18)+(14)+(10)+(6)+(2)$	66 Dy $n = 7, 6, 5, 4, 3, 2, 1$ $l = (1), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(14)+(18)+(14)+(10)+(6)+(2)$	67 Ho $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (1), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(1)+(14)+(18)+(14)+(10)+(6)+(2)$	68 Er $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (1), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(2)+(14)+(18)+(14)+(10)+(6)+(2)$	69 Tm $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (2), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(3)+(14)+(18)+(14)+(10)+(6)+(2)$	70 Yb $n = 8, 7, 6, 5, 4, 3, 2, 1$ $l = (1), (2), (7), (9), (7), (5), (3), (1)$ $N_e = (2)+(4)+(14)+(18)+(14)+(10)+(6)+(2)$

Table MH.2.1C