(7) n = principle quantum number

$n = 1, 2, 3, 4 \ldots$

l = angular momentum quantum #

$l = n-1 \ldots$

m_l = s $\underline{\quad}_{0}$

p $\underline{\quad}_{-1}$ $\underline{\quad}_{0}$ $\underline{\quad}_{+1}$

d $\underline{\quad}_{-2}$ $\underline{\quad}_{-1}$ $\underline{\quad}_{0}$ $\underline{\quad}_{1}$ $\underline{\quad}_{2}$

F $\underline{\quad}_{-3}$ $\underline{\quad}_{-2}$ $\underline{\quad}_{-1}$ $\underline{\quad}_{0}$ $\underline{\quad}_{1}$ $\underline{\quad}_{2}$ $\underline{\quad}_{3}$

(9) a) $n = 3$

$l = 0, 1, 2$ OK

m_l = $\underline{\quad}_{-2}$ $\underline{\quad}_{-1}$ $\underline{\quad}_{0}$ $\underline{\quad}_{1}$ $\underline{\quad}_{2}$

b) $n = 4$

$l = 0, 1, 2, 3$

m_l $\underline{\quad}_{-3}$ $\underline{\quad}_{-2}$ $\underline{\quad}_{-1}$ $\underline{\quad}_{0}$ $\underline{\quad}_{1}$ $\underline{\quad}_{2}$ $\underline{\quad}_{3}$ no $m_l = 4$

c) no $n = 0$

d) $l = 1$ $\underline{\quad}_{-1}$ $\underline{\quad}_{0}$ $\underline{\quad}_{1}$ no $m_l = 2$

73. $5p$: three orbitals

$3d_{z^2}$: one orbital

$4d$: five orbitals

$n=5$	$l=0$	1 orbital
	$l=1$	3 orbitals
	$l=2$	5 orbitals
	$l=3$	7 orbitals
	$l=4$	9 orbitals
		25 orbitals

$n=4$ $\quad 1+3+5+7 = 16$ orbitals

75 $n = 4$

a) l can be 0, 1, 2, 3

2e- + 8e- + 10e- + 14e- = 32

b) $n = 5$

$m_l = +1$

$l = 0, 1, 2, 3, 4$

are have +1 except $l = 0$

4 orbitals × 2e- = 8e total

c) $n = 5$

$m_s = +\frac{1}{2}$

$l = 0, 1, 2, 3, 4$

$m_l =$ 1, 3, 5, 7, 9

each orbital has one $+\frac{1}{2}$ so 25e-

d. $n = 3$

$\ell = 2$

3d sublevel with 5 orbitals so 10e-

e) $n = 2$

$\ell = 1$

2p sublevel with 3 orbitals so 6e-