Name: _____ period: ____ date: _____

ch. 4, 5 atom, atomic orbital / electron configuration test 45 points (3 ec) honors chemistry

1. Fill-in the below table' might be hypothetical (?) isotope(s). Need not show any work. [13 points]

symbol	# protons	# electrons	# neutrons	charge	Atomic mass
$^{88}Sr^{2+}$	38	36	50	+2	88
$^{139}La^{+3}$	57	54	83	+3	140
$^{68}Se^{-2}$	34	36	34	-2	68

2. What is the average atomic mass, based on the below hypothetical information; show your work, including equation(s) / formula(s). [10 points]

^{38}Ca	15%
^{40}Ca	80%
^{45}Ca	5%

$\bar{m}_{Ca} = \sum m_i p_i$

$= m_{38Ca} p_{38Ca} + m_{40Ca} p_{40Ca} + m_{45Ca} p_{45Ca}$

$= 38(15\%) + 40(80\%) + 45(5\%)$

$= 5.7 + 32 + 2.25$

$= 39.95$ amu/atom

3. In regards to tin, [15 points]

a. What is it's electron configuration; use the noble gas notation ?

[Kr] $5s^2$ $4d^{10}$ $5p^2$

2 + 1 2 + 4

b. Sketch it's orbital diagram

[ ] $\frac{\uparrow\downarrow}{5s}$ $\underbrace{\uparrow\downarrow\ \uparrow\downarrow\ \uparrow\downarrow\ \uparrow\downarrow\ \uparrow\downarrow}_{4d}$ $\underbrace{\uparrow\ \uparrow\ -}_{5p}$

1 2 2 pairs

c. Identify all valence electrons and inner shell electrons.

$5s^2 5p^2$ [ ] $4d^{10}$

2 + 3 pairs

4. Sketch the ___ atomic orbital; show it's orientation with respect to the appropriate axis (e.g. x-, y-, and / or z- axis) [10 points]

a. Pz

2 shape

3 axis / orientation

b. dxy