

Name: _____ period: _____ date: _____

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

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

symbol	# protons	# electrons	# neutrons	charge	Atomic mass
$^{88}\text{Sr}^{2+}$	38	36	50	+2	88
$^{149}\text{La}^{3+}$	57	54	83	+3	140
$^{68}\text{Se}^{-2}$	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]

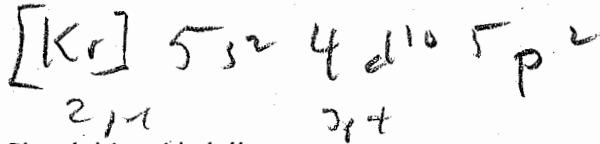
^{38}Ca 15%
 ^{40}Ca 80%
 ^{45}Ca 5%

$$\begin{aligned} \sum p_i X_i &= \sum m_i p_i \\ 3 &= m_{38\text{Ca}} p_{38\text{Ca}} + m_{40\text{Ca}} p_{40\text{Ca}} + m_{45\text{Ca}} p_{45\text{Ca}} \\ 3 &= 38 (15\%) + 40 (80\%) + 45 (5\%) \\ &= 5.7 + 32 + 2.25 \\ &= 39.95 \end{aligned}$$

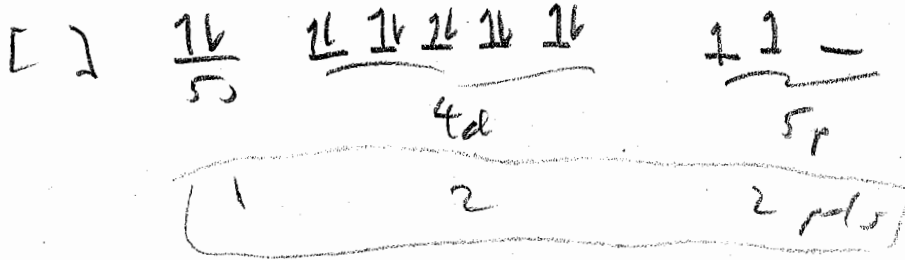
amu/atom

3. In regards to tin, [15 points]

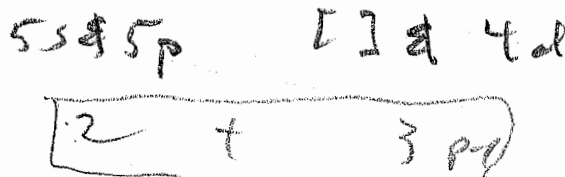
a. What is its electron configuration; use the noble gas notation?



b. Sketch its orbital diagram



c. Identify all valence electrons and inner shell electrons.



4. Sketch the ___ atomic orbital; show its 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

