

Name: \_\_\_\_\_ period: \_\_\_\_\_ date: \_\_\_\_\_

ch. 2 atomic structure & periodic trends test 50 points (4 ec) ngss chemistry

You may use your science notebook (i.e. your notes), classwork / homework assignment, periodic table / equation sheet, and a calculator. If you don't have a calculator then state that you don't have a calculator and you will earn all of the points in the problem / question if the only the answer is missing due to a lack of a calculator.

1. Fill-in the below table; isotopes might not exist. [13 points]

symbol	# protons	# neutrons	# electrons	charge	atomic mass
$^{90}\text{Sr}^{+2}$	38	52	36	+2	90
$^{80}\text{Se}^{-2}$	34	46	38	-2	80
$^{203}\text{Eu}^{+3}$	63	140	60	+3	203

2. Sketch the \_\_\_ atomic orbitals [6 points]

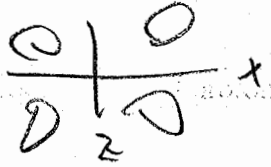
140  
63

a.  $p_z$

3 pt @  
1 pt: shape  
2 pt: axis



b.  $d_{xz}$



3. What is the relative atomic size of \_\_\_; basis / rationale? [10 points]

a. Sulfur versus oxygen

bigger bc has more shells of  $e^-$

674 pt @

b. Oxygen versus nitrogen

Smaller bc

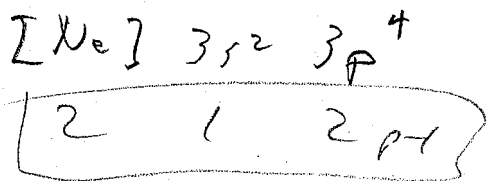
$\uparrow 2$   
 $\pm 5$

$\rightarrow \uparrow 2, 2 \rightarrow \uparrow 7$

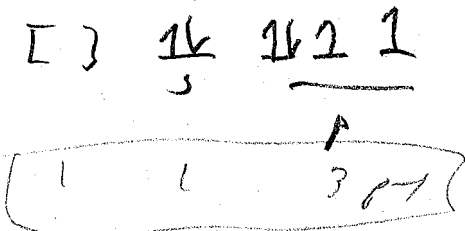
$\rightarrow$  valence  $e^-$  gets closer to nucleus  
 $\downarrow$   
size

4. In regards to the sulfur atom, [15 points]

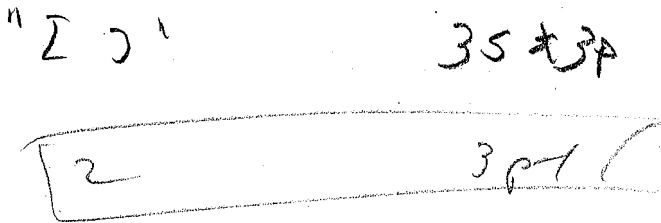
a. write it's electron configuration



b. sketch it's orbital diagram

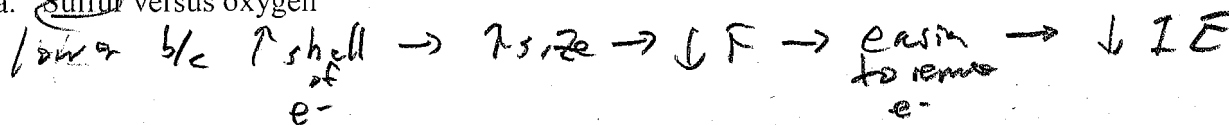


c. clearly identify all of the inner shell electrons and all of the valence electrons



5. What is the relative first ionization energy of \_\_\_\_; basis / rationale? [10 points]

a. Sulfur versus oxygen



b. Oxygen versus nitrogen

