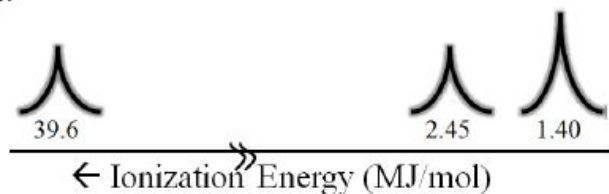


Unit 1 - Atomic Structure and Properties - Free Response I

Question _____ **Name:** _____

- 1) Use the photoelectron spectrum below to answer the following questions.



- Identify the element that would produce the above spectrum.
- Label each peak with numbers and letters that indicate its associated shell and subshell.
- Indicate the number of electrons that are associated with each peak on the photoelectron spectrum.
- Identify the quantum level (e.g., $n = 1$, $n = 2 \dots$) that is holding the valence electrons in this element.

- 2) Sr^{2+} and Br^- are isoelectronic.
- Which ion has the smaller radius?
 - Explain why the radii of these two ions are different sizes.
- 3) The following questions pertain to arsenic.
- Write the complete ground state electron configuration for arsenic, As.
 - How many unpaired electrons does arsenic have in its ground state? Justify your answer.
 - How many arsenic atoms are in 4.56 g pure sample of arsenic?