

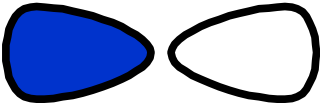
Complete the following.

1. An orbital is a reference to: (3 points)
- I) a region of high electron density.
  - II) a region in an atom where an electron is likely to be found.
  - III) a wave function resulting from specific values assigned to quantum numbers in wave equations.
  - IV) a spherical region around a nucleus where an electron can be found
- a. II, III, and IV
  - b. I and II
  - c. II and IV
  - d. I, II, and III
- Answer \_\_\_\_\_

2.  $[\text{Kr}]5s^24d^{10}5p^5$  is the electronic configuration of: (3 points)
- a. Te
  - b. I
  - c. At
  - d. Br
- Answer \_\_\_\_\_

3. Which one of the following set of quantum numbers would not be allowed? (3 points)
- a.  $n = 3, \ell = 3, m_\ell = 1$
  - b.  $n = 3, \ell = 1, m_\ell = -1$
  - c.  $n = 3, \ell = 2, m_\ell = 1$
  - d.  $n = 3, \ell = 2, m_\ell = -1$
- Answer \_\_\_\_\_

4. Below is a sketch of a 2p orbital. In the spaces provided, sketch corresponding 3p and 4p orbitals. Justify why you chose to make your drawings as you did. (7 points)

2p	3p	4p
		

**Justification:**

