



Electron Configuration



1. Given $4p^6$

a. What does 4 represent? _____

b. What does "p" represent? _____

c. What does the 6 represent? _____

2. How are 2s and 2p orbitals the same? How do they differ?

3. What is the lowest energy that a d orbital can have? _____

4. What is the maximum number of electrons that can be in a f subshell? _____

5. How many d orbitals of the same energy are possible? _____

6. Consider the following electron configuration.

A) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^1$

B) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$

C) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^8$

D) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6$

E) $1s^2 2s^2 2p^6 3s^2 3p^1$

i. Which electron configuration represents an element with the greatest number of valence electrons? _____

ii. Which electron configuration represents an element with the least number of valence electrons? _____

iii. Which electron configuration represents an element with three dots in the Lewis dot diagram? _____

iv. Which electron configuration represents an element with an octet in its outermost energy level? Draw its Lewis electron dot diagram.

v. Which electron configuration represents an element that has one less than a full outer energy level? _____

vi. Identify the elements.

A) = _____ B) = _____ C) = _____ D) = _____ E) = _____



Electron Configuration



Answers

1. Given $4p^6$

- a. What does 4 represent? Energy level
- b. What does "p" represent? Shape
- c. What does the 6 represent? Number of e^-

2. How are 2s and 2p orbitals the same? How do they differ?

They have the same energy level. They differ in shape.

3. What is the lowest energy that a d orbital can have? 3

4. What is the maximum number of electrons that can be in a f subshell? 14

5. How many d orbitals of the same energy are possible? 5

6. Consider the following electron configuration.

A) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^1$

B) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$

C) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^8$

D) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6$

E) $1s^2 2s^2 2p^6 3s^2 3p^1$

i. Which electron configuration represents an element with the greatest number of valence electrons? B – 7 valence electrons

ii. Which electron configuration represents an element with the least number of valence electrons? A – 1 valence electrons

iii. Which electron configuration represents an element with three dots in the Lewis dot diagram? E – 3s and 3p have a total of three valence electrons

iv. Which electron configuration represents an element with an octet in its outermost energy level? Draw its Lewis electron dot diagram.

D.



v. Which electron configuration represents an element that has one less than a full outer energy level? B – has 5 electrons in the 4p subshell

vi. Identify the elements.

A) = Cs B) = Br C) = Pd D) = Xe E) = Al