

Q2W1- Qs. Bank-Completing the model of the atom.

Completion

Complete each statement.

A- electron cloud

C- inner transition element

E- 4 Electrons

G- 13 Electrons

B- orbital

D- electron configuration

F- 19 Electrons

1. State the total number of electrons in an atom that has each of the following electron configurations:
[He] $2s^2$ 4 Electrons, [Ne] $3s^23p^1$ _____,
2. The last electron of a(n) _____ occupies an inner-level $4f$ orbital in the sixth period or a $5f$ orbital in the seventh period.
3. You can write _____ by interpreting the periodic table using s , p , d , and f blocks.
4. Within a sublevel, electrons fill the s _____ first.
5. The most stable arrangement of electrons in an atom is a(n) _____

Matching

Match each statement with the correct item below.

a. s , p , d , or f within an energy d. lanthanide or actinide level

b. can hold a maximum of two electrons e. discovery led to electron cloud model

c. $1s^22s^22p^63s^23p^6$

- ___ 6. electron configuration
___ 7. inner transition element
___ 8. orbital
___ 9. Heisenberg uncertainty principle
___ 10. sublevel

Modified True/False

Indicate whether the statement is true or false.

- ___ 11. The Bohr model of the atom could be correctly applied to only one atom, the helium atom.
- ___ 12. The designations used to represent electron energy sublevels in an atom are a, b, c, and d.
- ___ 13. The $1s$ orbital is farther from the nucleus than is the $2s$ sublevel.
- ___ 14. The maximum number of electrons in any p sublevel is six.
- ___ 15. The results of Rutherford's gold foil experiment suggested that most of an atom is solid.

- ## Multiple Choice

25. If an atom contains six energy levels, how many sublevels does it contain?
a. two c. six
b. one d. four

26. Which of the following orbitals is closest to the nucleus?
a. 1s c. 4s
b. 2p d. 3d

27. Which of the following is the best evidence for the existence of sublevels?
a. large gaps in a spectrum c. all colors of light in a spectrum
b. only four lines in a spectrum d. closely spaced lines in a spectrum

28. Compare the maximum number of electrons possible in sublevel 3d with the maximum number that could be in sublevel 4d.
a. There are more in 4d. c. There are more in 3d.
b. They are impossible to compare. d. They are the same.

29. A p orbital has a _____ shape.
a. circular c. spherical
b. doughnut d. dumbbell

30. Transition elements have final electrons in the _____ sublevel.
a. d c. p
b. f d. s

- ___ 31. If a wave has a high frequency, it also has _____.
a. high wavelength and high energy c. high wavelength and low energy
b. low wavelength and high energy d. low wavelength and low energy
- ___ 32. What is the highest occupied sublevel in the structure of an atom of arsenic?
a. $3p$ c. $3d$
b. $4p$ d. $3s$
- ___ 33. What are the valence electrons in the electron configuration of tin, $[\text{Kr}]4d^{10}5s^25p^2$?
a. $5p^2$ c. $[\text{Kr}]$
b. $4d^{10}$ d. $5s^25p^2$
- ___ 34. An atom is in Group 2, Period 3. How many electrons does the atom contain?
a. 2 c. 6
b. 3 d. 12
- ___ 35. An element is most likely to have properties similar to those of _____.
a. a transition element c. another element in the same group
b. another element in the same period d. a noble gas
- ___ 36. Electron 1 falls from energy level four to energy level two. Electron 2 falls from energy level three to energy level two. Which electron is more likely to emit red light?
a. Neither electron could emit red light. c. 1
b. Both electrons emit red light. d. 2
- ___ 37. Light is released when an electron moves from higher energy levels to a lower energy level. The resulting spectrum is a(n) _____ spectrum.
a. emission c. absorption
b. excitation d. lower energy
- ___ 38. Which is a possible last sublevel for an element found in Group 18?
a. $3p^6$ c. $4s^2$
b. $4p^3$ d. $4d^8$
- ___ 39. What element has the electron configuration of $[\text{Ne}]3s^23p^1$?
a. aluminum c. sodium
b. silicon d. boron
- ___ 40. The conclusion that it's impossible to measure accurately both the position and the energy of an electron at the same time was made by _____.
a. Heisenberg c. Bohr
b. Dalton d. Proust

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