

2.2 Electron Configuration & Orbital Diagrams (S)

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. For an electron in an atom to change from the ground state to an excited state,
- energy must be released.
 - energy must be absorbed.
 - radiation must be emitted.
 - the electron must make a transition from a higher to a lower energy level.
- _____ 2. The letter designations for the first four sublevels, with the number of electrons that can be accommodated in each sublevel are
- | | |
|--------------------------------------|--------------------------------------|
| a. $s: 1, p: 3, d: 10,$ and $f: 14.$ | c. $s: 2, p: 6, d: 10,$ and $f: 14.$ |
| b. $s: 1, p: 3, d: 5,$ and $f: 7.$ | d. $s: 1, p: 2, d: 3,$ and $f: 4.$ |
- _____ 3. Which is the ground-state electron configuration for ${}_{24}\text{Cr}$?
- | | |
|----------------------------|----------------------------|
| a. $[\text{Ar}] 4s^2 3d^4$ | c. $[\text{Ar}] 4s^3 3d^3$ |
| b. $[\text{Ar}] 4s^1 3d^5$ | d. $[\text{Ar}] 4s^4 3d^2$ |
- _____ 4. The main energy levels of an atom are indicated by the
- | | |
|------------------------------|-------------------------------|
| a. orbital quantum numbers. | c. spin quantum numbers. |
| b. magnetic quantum numbers. | d. principal quantum numbers. |
- _____ 5. The number of orbitals for the d sublevel is
- | | |
|-------|-------|
| a. 1. | c. 5. |
| b. 3. | d. 7. |

2.2 Electron Configuration & Orbital Diagrams (S)

Answer Section

MULTIPLE CHOICE

1. ANS: B PTS: 1 DIF: II OBJ: 3.3.2
 STA: II.II.9-12.9
2. ANS: C PTS: 1 DIF: II OBJ: 3.3.3
 STA: I.I.III.9-12.2
3. ANS: B PTS: 1 DIF: III OBJ: 3.3.4
 STA: I.I.III.9-12.2
4. ANS: D PTS: 1 DIF: I OBJ: 3.3.3
 STA: I.I.III.9-12.2
5. ANS: C PTS: 1 DIF: II OBJ: 3.3.3
 STA: I.I.III.9-12.2