

APOLLO

Electron configurations

SL

Chemistry

First assessment 2025

11 questions | questions

2. Which of the following species have the same number of outer electrons? The letters **do not** represent symbols of elements.



- A. X and Y
- B. X and W
- C. Z and Y
- D. Z and W

— 3 —

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3. Which diagram shows the correct electron configuration of a nitrogen atom in the ground state?

- A. 
1s **2s** **2p**
- B. 
1s **2s** **2p**
- C. 
1s **2s** **2p**
- D. 
1s **2s** **2p**

5. Which row correctly shows the shape of s and p atomic orbitals?

A.



s



p

B.



s



p

C.



s



p

D.



s



p

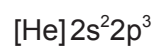
- 3.** The emission spectrum of hydrogen provides evidence for which feature of atomic structure?
- A. Nucleus
 - B. Energy levels
 - C. Isotopes
 - D. Protons

4. What is the maximum number of electrons that can occupy the $n = 3$ main energy level?
- A. 3
 - B. 8
 - C. 18
 - D. 28

— 3 —

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6. What is the charge of the monatomic ion usually formed by the element with the following electron configuration?



- A. 3–
- B. 2+
- C. 3+
- D. 5+

5. What is the maximum number of electrons that can occupy the fourth main energy level of an atom?
- A. 8
 - B. 18
 - C. 32
 - D. 64

12. What is the electron configuration of an atom of Cu?

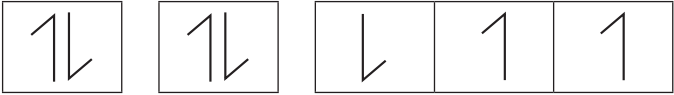
- A. $[\text{Ar}]3\text{d}^9$
- B. $[\text{Ar}]4\text{s}^23\text{d}^9$
- C. $[\text{Ar}]4\text{s}^24\text{d}^9$
- D. $[\text{Ar}]4\text{s}^13\text{d}^{10}$

— v —

Turn over
=====

3. Which orbital diagram represents a correct ground state electron configuration based on the Pauli exclusion principle and Hund's rule?

A. 
 1s 2s 2p

B. 
 1s 2s 2p

C. 
 1s 2s 2p

D. 
 1s 2s 2p

— 3 —

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2. What is the best evidence that energy levels are closer together as distance from the nucleus increases?
- A. Hydrogen has a line emission spectrum in each of the UV, visible and IR regions.
 - B. First ionization energies decrease down a group.
 - C. Lines in an emission spectrum converge at higher energy.
 - D. First ionization energy generally increases across a period.

3. Which electron transition in the hydrogen atom emits radiation with the highest energy?
- A. $n = 1$ to $n = 2$
 - B. $n = 2$ to $n = 3$
 - C. $n = 2$ to $n = 1$
 - D. $n = 3$ to $n = 2$