

Chemistry Knowledge Test – Semester I, Part 1

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Name:

1. Choose the correct statement. (2 points)

- A. The atomic nucleus has a positive charge.
- B. The atomic nucleus always contains two types of elementary particles.
- C. The atomic nucleus has a negative charge.
- D. The mass of the atomic nucleus is equal to the total mass of the electrons orbiting it.

2. Lithium occurs in nature as two isotopes: ${}^7\text{Li}$ and ${}^6\text{Li}$.

Select the set in which the number of nucleons in the atomic nuclei of these isotopes is correctly given. (1 point)

- A. ${}^7\text{Li}$ ($3p^+$, $4n^0$); ${}^6\text{Li}$ ($3p^+$, $3n^0$)
- B. ${}^7\text{Li}$ ($7p^+$, $4n^0$); ${}^6\text{Li}$ ($6p^+$, $4n^0$)
- C. ${}^7\text{Li}$ ($3p^+$, $7n^0$); ${}^6\text{Li}$ ($3p^+$, $6n^0$)
- D. ${}^7\text{Li}$ ($3p^+$, $4n^0$); ${}^6\text{Li}$ ($3p^+$, $6n^0$)

3. Choose the correct completion of the sentence.

Use the periodic table of elements. (2 points)

In a sulfur atom, the valence electrons are located in the sublevels:

- A. s and p B. s and d C. p and d D. s and f

4. Evaluate the truth of the following statements.

Mark T if the statement is true, or F if it is false. (2 points)

No.	Statement	T	F
1.	The third electron shell contains 3 sublevels, which can hold a maximum of 9 electrons.	☐	☐
2.	The radius of the L shell is greater than the radius of the M shell.	☐	☐

5. Determine the chemical symbol of the element located in Period 3 and Group 13 of the periodic table. Also, write the abbreviated electron configuration of its atom. (2 points)

Chemical symbol: _____

Abbreviated electron configuration: _____

6. Write the full electron configuration of a molybdenum atom and explain the inconsistency with the standard rules of electron arrangement. (1 point)

Answer:

Grading scale:

- 2.6 pts – passing
- 3.6 pts – satisfactory
- 6.0 pts – good
- 7.6 pts – very good
- 9.5 pts – excellent