

QB365 Question Paper Software
11th Standard - Chemistry
Classification of Elements and Periodicity in Properties
Assertion and reason

Exam Time: 00:20 Hrs

Date: 2025-10-11

Total Marks: 10

Questions:

Assertion and reason

1. **Assertion:** Generally, ionisation enthalpy increases from left to right in a period.

Reason: When successive electrons are added to the orbitals in the same principal quantum level, the shielding effect of inner core of electrons does not increase very much to compensate for the increased attraction of the electron to the nucleus.

Codes:

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion and Reason both are wrong statement.
- (d) Assertion is wrong statement but Reason is correct statement.

2. **Assertion:** Boron has a smaller first ionisation enthalpy than beryllium.

Reason: The penetration of a 2s electron to the nucleus is more than the 2p electron hence 2p electron is more shielded by the inner core of electrons than the 2s electrons.

Codes:

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion and Reason both are wrong statement.
- (d) Assertion is wrong statement but Reason is correct statement.

3. **Assertion:** Electron gain enthalpy becomes less negative as we go down a group.

Reason: Size of the atom increases on going down the group and the added electron would be farther from the nucleus.

Codes:

- (a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) Assertion and Reason both are wrong statement.
- (d) Assertion is wrong statement but Reason is correct statement.

4. **Assertion :** Second period consists of 8 elements.

Reason : Number of elements in each period is four times the number of atomic orbitals available in the energy level that is being filled.

Codes:

- (a) Assertion is correct, reason is correct; reason is a correct explanation for assertion.
- (b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion

- (c) Assertion is correct, reason is incorrect
- (d) Assertion is incorrect, reason is correct.

5. **Assertion :** In a triad, the three elements present have same gaps of atomic masses.

Reason : Elements in a triad have similar properties.

Codes:

- (a) Assertion is correct, reason is correct; reason is a correct explanation for assertion.
- (b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion
- (c) Assertion is correct, reason is incorrect
- (d) Assertion is incorrect, reason is correct.

6. **Assertion :** Smaller the size of an atom greater is the electronegativity.

Reason : Electronegativity refers to the tendency of atom to share electrons with other atom.

Codes:

- (a) Assertion is correct, reason is correct; reason is a correct explanation for assertion.
- (b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion
- (c) Assertion is correct, reason is incorrect
- (d) Assertion is incorrect, reason is correct.

7. **Assertion :** Atomic size increases along a period.

Reason : Effective nuclear charge increases as the atomic number increases resulting in the increased attraction of electrons to the nucleus.

Codes:

- (a) Assertion is correct, reason is correct; reason is a correct explanation for assertion.
- (b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion
- (c) Assertion is correct, reason is incorrect
- (d) Assertion is incorrect, reason is correct.

8. **Assertion :** Second ionization enthalpy will be higher than the first ionization enthalpy.

Reason : Ionization enthalpy is a quantitative measure of the tendency of an element to lose electron.

Codes:

- (a) Assertion is correct, reason is correct; reason is a correct explanation for assertion.
- (b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion
- (c) Assertion is correct, reason is incorrect
- (d) Assertion is incorrect, reason is correct. It is difficult to remove an electron from a positively charged ion than a neutral atom.

9. **Assertion :** Alkali metals have least value of ionization energy within a period.

Reason : They precede alkaline earth metals in periodic table.

Codes:

- (a) Assertion is correct, reason is correct; reason is a correct explanation for assertion.
- (b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion
- (c) Assertion is correct, reason is incorrect
- (d) Assertion is incorrect, reason is correct.

10. **Assertion :** Electron gain enthalpy can be exothermic or endothermic.

Reason : Electron gain enthalpy provides a measure of the ease with which an atom adds an electron to form anion.

Codes:

(a) Assertion is correct, reason is correct; reason is a correct explanation for assertion.

(b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion

(c) Assertion is correct, reason is incorrect

(d) Assertion is incorrect, reason is correct.

Answers Key:

Assertion and reason

1. (b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

2. (c) Assertion and Reason both are wrong statement.

3. (d) Assertion is wrong statement but Reason is correct statement.

4. (c) Assertion is correct, reason is incorrect

Explanation:

Number of elements in each period is twice the number of atomic orbitals available in the energy level that is being filled.

5. (d) Assertion is incorrect, reason is correct.

Explanation:

In a triad, the atomic mass of the middle element is the mean of the atomic masses of the first and third elements.

6. (c) Assertion is correct, reason is incorrect

Explanation:

Electronegativity refers to the tendency of atom to attract bonding electrons.

7. (c) Assertion is correct, reason is incorrect

Explanation:

Atomic size generally decreases along a period

8. (b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion

Explanation:

It is difficult to remove an electron from a positively charged ion than a neutral atom.

9. (b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion

Explanation:

Alkali metals belong to first group and have largest size in a period and hence low I.E.

10. (b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion

Explanation:

Depending on the element, the process of adding an electron to the atom can be either endothermic or exothermic.