Exercise Short Questions Answers

Q.1 Why noble gases are not reactive?

Ans: Noble gases are not reactive because they have their valence shells completely filled. They have 2 or 8 electrons in their valence shells. Their atoms do not have vacant spaces in their valence shell to accommodate more electrons. Therefore they do not gain, lose or share electrons.

Q.2 Why Cesium (at.no.55) requires little energy to release its one electron present in the outermost shell?

Cesium requires little energy because it has greater atomic size, more shielding effect (due to presence of more electrons) and low ionization energy due to which the hold of inner nucleus on valence.

Q.3 How is periodicity of properties dependent upon number of protons in an atom?

Ans: Number of protons in an atom represents atomic number of that element which increases regularly by one form element to element. So the arrangement of elements according to increasing atomic number shows the periodically in the electronic configuration of the elements that leads to periodicity in their properties.

Q.4 Why shielding effect of electrons makes cation formation easy?

Ans: The shielding effect of electrons makes the cation formation easy because it reduces the nuclear pull on the outermost electrons and they are less tightly held by the nucleus and can easily be lost from the outermost shell.

Q.5 What is the difference between Mendeleev's periodic law and modem periodic law?

Ans:

Mendeleevs periodic law	Modern periodic law
Properties of the elements are periodic function of their atomic masses.	Properties of the elements are periodic function of their atomic numbers.
Atomic masses is less fundamental property and it is the basis of mendeleevs periodic law.	Atomic number is more fundamental property and it is the basis of modern periodic law.

Q.6 What do you mean by groups and periods in a Periodic Table?

Ans: The horizontal rows of elements in a periodic table are called periods. The vertical columns in a periods table are called group. There are 18 groups in the long form of the periodic table. They are studied from top to bottom.

Q.7 Why and how are elements arranged in 4^{th} period?

Ans: The elements (Na, Mg, Al, Si, P, S, Cl and Ar) are arranged in the 4^{th} period because they are all having four electronic shells and are arranged by increasing atomic number

from left to right the period.

Q.8 Why the size of atom does not decrease regularly in a period?

Ans: The size of atom does not decrease regularly in a period. This irregularity in the transition metals is due to the involvement of d orbital. It provides poor shielding effect.

Q.9 Give the trend of ionization energy in a period.

Ans: ionization energy increases from left to right in a period and decreases from top to bottom in a group.

Reason:

It is because the size of atoms reduces and valence electrons are held strongly by the electrostatic force of nucleus.

Exercise Long Question Answers

Q.1 Explain the contributions of Mendeleev for the arrangement of elements in a Periodic Table.

Ans: See Q. No. **3** (Subjective Part, Long Questions Answers)

Q.2 Show why in a 'period' the size of an atom decreases if one moves from left to right.

Ans: See Q. No. **11** (Subjective Part, Long Questions Answers)

Q.3 Describe the trends of electronegativity in a period and in a group.

Ans: See Q. No. **15** (Subjective Part, Long Questions Answers)

Q.4 Discuss the important features of modem Periodic Table.

Ans: See Q. No. 7 (Subjective Part, Long Questions Answers)

Q.5 What do you mean by blocks in a periodic table and why elements were placed in blocks?

Ans: See Q. No. **8** (Subjective Part, Long Questions Answers)

Q.6 Discuss in detail the periods in Periodic Table?

Ans: See Q. No. **9** (Subjective Part, Long Questions Answers)

Q.7 Why and how elements are arranged in a Periodic Table?

Ans: See Q. No. **5** (Subjective Part, Long Questions Answers)

Q.8 What is ionization energy? Describe its trend in the Periodic Table?

Ans: See Q. No. **13** (Subjective Part, Long Questions Answers)

Q.9 Define electron affinity, why it increases in a period and decreases in a group in the Periodic Table.

Ans: See Q. No. **14** (Subjective Part, Long Questions Answers)

Q.10 Justify the statement, bigger size atoms have low ionization energy and have more shielding effect.

Ans: Ionization Energy: