

Chemistry - 11th Class Chemistry Short Questions Chapter 5 Preparation

Q1. Why the anode rays depend upon the nature of the gas?

Ans 1: Anode rays are those particles which are consisted of rest of the atom or molecule after the removal of one electron, the mass of every anode ray particle depends upon the nature of the gas, so the anode rays for all gaseous substances are different.

Q2. How did Rutherford's model of an atom first of all proved the existence of nucleus of the atom?

Ans 1: Rutherford observed that most of the α -particles passed straight through the gold foil without any deflection from the path. Few of them were deflected at some angle more than 90° and a few were deflected back on the original path. He concluded that the atom contains heavy and positively charged part at the center. This heavy part at the center is called nucleus.

Q3. How the energy of the photon can be calculated from the measurement of the frequency, wavelength or wave number of the photon?

Ans 1:

Q4. Heisenberg's uncertainty principle has no relation with Bohr's atomic model. Justify it.

Ans 1: Since the electron has wavy nature and paths are elliptical as well, so the simultaneous determination of position and momentum is not possible. But Bohr's model does not accommodate the wavy nature of electron. He says that the paths are fixed orbits and their orbits are planar. It means that Bohr's model is very simple as compared to Heisenberg's uncertainty principle.

Q5. The energy difference between adjacent levels goes on decreasing sharply. Why?

Ans 1:

If we put the value of n as 1,2,3,4 we get the energies of various orbits of hydrogen atom. These values are as follows:

$$E_1 = -2.18 \times 10^{-18} \text{J}$$

$$E_2 = -0.54 \times 10^{-18} \text{J}$$

$$E_3 = -0.24 \times 10^{-18} \text{J}$$

$$E_4 = -0.14 \times 10^{-18} \text{J}$$

As is clear from these values that energy differences between adjacent levels go on decreasing from lower to the higher level.

Q6. How do you come to know that the velocities of electrons in higher orbits are less than those in lower orbits of hydrogen atom?

Ans 1:

Q7. How the slow neutrons prove to be more effective than the fast neutrons?

Ans 1:

Q8. Why every series of H-spectrum is a convergent series?

Ans 1:

The lines of the every series of H-spectrum are not equally spaced. The reason is that energy levels are not equally spaced. Energy levels become close to each other from lower to the higher levels. For this reason, the lines start coming close to each other. The non-equivalent energy differences make the convergent series.

Q9. The magnetic quantum number gives us the orientation of orbital in space. Justify it.

Ans 1: In order to designate the directions of p-orbitals in p-subshell, we need an additional quantum number and that is called magnetic quantum number. It tells us the orientation of orbital in space p-subshell has three orbital and thus have three directions in space. For each direction there is a separate value of magnetic quantum number.

Q10. What are defects of Bohr's atomic model?

Ans 1:
