Chemistry - 11th Class Chemistry Short Questions Chapter 5 Preparation

Q1. **Why the photographic plate is white and few dark lines are there in the line absorption spectra of a substance?**

Ans 1: Some of the photons are absorbed by the sample to excite the electrons of and substance from lower energy levels to higher energy levels. These photons of light don't reach the photographic plate. Rest of the light reaches the photographic plate, arid the plate is white. Only those places are dark in the form of sharp lines where the photon don't reach.

Q2. **What is Moseley's law?**

Ans 1:

Q3. **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.

Q4. **How the value of the Redberg's constant can be justified from Bohr's equation?**

Ans 1:

Q5. **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.

Q6. **The x-rays produced in a discharge tube experiment are characteristic of the target metal. Justify it.**

Ans 1:

The x-rays which are emitted from the surface of the metal depend upon the atomic number of the metal. Greater the number of protons in the nucleus of metal atom great the forces of attractions for the Inner electrons. Greater the energy differences, smaller the wavelength of x-rays.

Q7. **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 a-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.

Q8. **State Pauli's exclusion principle and Hund's rule?**

Ans 1: According to Pauli's principle "no two electrons in an atom can have the same set of four quantum numbers". According to Hund's rule,"if degenerate orbitals are available and more than two electrons are to be placed in them, then place them in separate orbitals with the same spins rather than in the same orbital with the opposite spins."

Q9. **How does Bohr introduce the Planck's quantum theory in his model?**

Ans 1: Bohr proposed that electrons move around the nucleus in the fixed orbits with definite energies. Whenever, they change the orbits they emit or absorb the energy in terms of photons which was suggested by Planck.

Q10. **Whichever gas is used in the discharge tube, the nature of the cathode rays remains the same. Why?**

Ans 1: All the gases are consisted of atoms or molecules. They have electrons in outermost orbitals. These electrons are detached by the high voltage and due to collisions, these electrons become free. They are repelled by the cathode and attracted towards the anode. That is why, they are called cathode rays. They are always electrons and nothing else.
