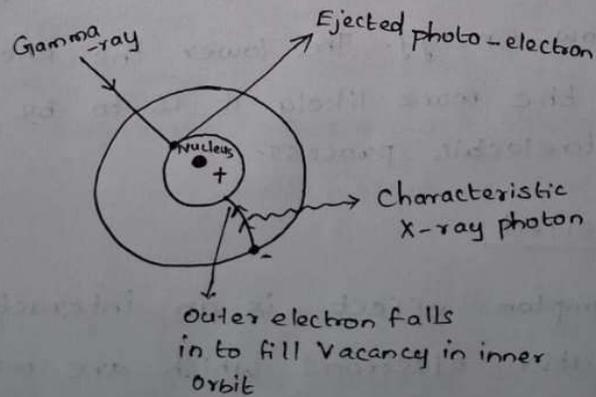


Q5: Photoelectric effect:



An γ -ray can be absorbed by transferring all of its energy to an inner orbital electron in an

atom of the absorber. The electron is ejected from the atom and the γ -ray disappears as it has lost all of its energy and it never had any mass. The atom is now left with a vacant inner electron orbit, which it will fill with one of the outer electrons. When this happens, it releases a small amount of energy in the form of a characteristic x-ray photon. The x-ray is called a characteristic photon because its energy is characteristic of the absorbing material. The x-ray photon has a fixed energy because orbital electrons have fixed energies which correspond to the orbit which they occupy. Photoelectric absorption occurs when the incident γ -ray has a fairly low energy. The lower the energy of the photon, the more likely it is to be absorbed by the photoelectric process.

