

Question 1. Consider a beam of electrons (each electron with energy E_0) incident on a metal surface kept in an evacuated chamber. Then,

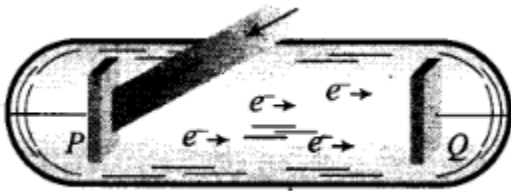
(a) no electrons will be emitted as only photons can emit electrons

(b) electrons can be emitted but all with an energy, E_0

(c) electrons can be emitted with any energy, with a maximum of $E_0 - \phi$ (ϕ is the work function)

(d) electron can be emitted with energy ,with a maximum of E_0

Solution: (d) If a beam of electrons of having energy E_0 is incident on a metal surface kept in an evacuated chamber.



The electrons can be emitted with maximum energy E_0 (due to elastic collision) and With any energy less than E_0 , when part of incident energy of electron is used in liberating the electrons from the surface of metal.