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

1) electrons can be emitted with any energy, with a maximum of $E_0 - \phi$ (ϕ is the work function)
2) electrons can be emitted with any energy, with a maximum of E_0.
3) no electrons will be emitted as only photons can emit electrons.
4) electrons can be emitted but all with an energy, E_0.

Sol. 2) electrons can be emitted with any energy, with a maximum of E_0.

When a beam of electrons of energy E_0 of each electron incident on a metal surface kept in a vacuum, then due to elastic collisions with electrons on surface, the energy of incident electrons will be transferred to the emitted electrons. To emit the electrons below the surface a part of E_0 of incident electrons is consumed against work function so the energy of emitted electrons becomes less than E_0. So, the maximum energy of emitted electrons can be E_0 and with any energy less than E_0, when part of the incident energy of the electron is used in liberating the electrons from the surface of the metal.