

Solutions

2.1 B Use photon energy = Planck constant $\times$ frequency. Maximum kinetic energy = photon energy - work function. Increasing intensity at fixed frequency increases photon arrival rate, not individual photon energy.

2.2 $K_{\max} = \text{photon energy} - \text{work function} = 4.8 - 2.1 = 2.7 \text{ eV}$.

2.3 False. Electrons do not accumulate many sub-threshold photons in the elementary single-photon model. Do not confuse photon number with photon energy.

2.4 photon. photon means A quantum of electromagnetic radiation.

3.1 2.0 eV cannot cause emission; 4.0 eV gives maximum kinetic energy 1.5 eV. Above threshold, greater intensity supplies more photons, not more energy per photon. It does not raise $K_{\max}$.