

45. The energy received by each electron is exactly the difference in energy between the bottom of the conduction band and the top of the valence band (1.1 eV). The number of electrons that can be excited across the gap by a single 662-keV photon is  $N = (662 \times 10^3 \text{ eV}) / (1.1 \text{ eV}) = 6.0 \times 10^5$ . Since each electron that jumps the gap leaves a hole behind, this is also the number of electron-hole pairs that can be created.