

29. Using the result of problem 3, the number of photons emitted from the laser per unit time is

$$R = \frac{P}{E_{\text{ph}}} = \frac{2.00 \times 10^{-3} \text{ W}}{(1240 \text{ eV} \cdot \text{nm}/600 \text{ nm})(1.60 \times 10^{-19} \text{ J/eV})} = 6.05 \times 10^{15}/\text{s} ,$$

of which $(1.0 \times 10^{-16})(6.05 \times 10^{15}/\text{s}) = 0.605/\text{s}$ actually cause photoelectric emissions. Thus the current is $i = (0.605/\text{s})(1.60 \times 10^{-19} \text{ C}) = 9.68 \times 10^{-20} \text{ A}$.