

14. (a) Eq. 42-6 leads to

$$\begin{aligned} E &= E_F + kT \ln(P^{-1} - 1) \\ &= 7.0 \text{ eV} + (8.62 \times 10^{-5} \text{ eV/K})(1000 \text{ K}) \ln\left(\frac{1}{0.90} - 1\right) \\ &= 6.8 \text{ eV} . \end{aligned}$$

(b) $n(E) = CE^{1/2} = (6.81 \times 10^{27} \text{ m}^{-3} \cdot \text{eV}^{-3/2})(6.8 \text{ eV})^{1/2} = 1.77 \times 10^{28} \text{ m}^{-3} \cdot \text{eV}^{-1}$.

(c) $n_0(E) = P(E)n(E) = (0.90)(1.77 \times 10^{28} \text{ m}^{-3} \cdot \text{eV}^{-1}) = 1.6 \times 10^{28} \text{ m}^{-3} \cdot \text{eV}^{-1}$.