

Homework 3

EE 362 Electronic, Magnetic, & Optical Properties of Materials (Spring 2024)

Wednesday, February 7, 2024

- 1) 3.5
- 2) 3.9a
- 3) 3.18
- 4) 3.26a
- 5) 3.27a
- 6) 3.41
- 7) 3.45
- 8) A material has a Fermi energy of 0.34 eV. *a)* At 74°F, determine the energy $E = E_F + 2.4k_B T$ and the probability that a state at this energy is occupied by an electron (unitless and %). *b)* At 74°F, determine the energy $E = E_F - 2.8k_B T$ and the probability that a state at this energy is occupied by a hole (unitless and %).

Due Monday, February 12, 2024.

Note: Carry *at least* 6 significant figures on constants/parameters in calculations.
Give answers with 4-5 significant figures.