

ELEG240- Spring, 2006
Homework 8
Due 4/26, noon

1. Using the one-dimensional crystal model, and also the approximate formula 8.C.17, calculate the lowest energy state in joules and in eV for a barrier height of 5 eV, a crystal period of 5 Å, and a barrier width of 1 Å. Note: you cannot solve this analytically, but must do it by plugging in values until the equation is solved. Helpful hint: when plugging values into sines and cosines, use radians.
2. For the same crystal as problem 1, calculate the effective mass of the lowest energy band. Again, you will need to do it numerically.