why intrinsic?

1. What is the probability of an electron being thermally promoted to conduction band in diamond at 27 deg Celsius if the band gap is 5.6 eV wide.
2. In an n type semiconductor, the fermi level lies 0.4 eV below the conduction band. If the concentration of donor atoms is doubled, find the new position of the fermi level w.r.t conduction band.
3. Calculate the position of Fermi level in n type Si at T=300K w.r.t the intrinsic Fermi energy level. Where N_o= 2X 10^{17} /cm^3 and N_A= 3X 10^{16}/cm^3.
4. Determine the position of the Fermi level w.r.t the valance band energy in p type GaAs at T=300K. N_A= 5X 10^{16}/cm^3 and N_o= 4X 10^{15} /cm^3
5. Determine the electron and hole concentrations for Si at T= 300K, if the fermi level is 0.22 eV above the valance band energy level.