ASSIGNMENT 1

Show that

**SOLUTION**

**Po = Nv F (Ev)**

**Where Po = Effective Density of State (cm-3) located at the valence band edge.**

**F (Ev) = Probability of the presence of an electron at Ev.**

**Recall , F(E)**

**If**

Therefore,

**ASSIGNMENT 2**

Show that

Recall,

Dividing No by Ni,

)/

Dividing Po by Pi,

)/

If ni = pi,

Therefore,

ASSIGNMENT 3

Consider a semiconductor at temperature T=300K with doping concentration Nd = = 1350) ). Calculate the drift current density for an applied electric field of E = 35, intrinsic concentration ni = 1.5 X State what type of material is the semiconductor.

Solution:

Given that;

Nd = = 1350)) E = 35 ni = 1.5 X

q= 1.6

Nd=n= ; np=therefore p= =

b. Since therefore the material is an n-type material