Tutorial #8

Problem 1 – pn junction diode

1. A one-sided, short-base, p/n+ diode has the following properties: $Na = 1 \times 10^{16} cm^{-3}$, $Nd = 1 \times 10^{19} cm^{-3}$, area = 400 μm^2, W_p = 1.0 μm, and W_n = 1.0 μm. For V_D = -2.5V / V_D = 0V / and V_D = 0.45V,

   a) What is the depletion layer width?
   b) What is the maximum electrostatic field in the depletion region?
   c) What is the minority carrier concentration at the edges of the depletion layer?
   d) What is the minority carrier concentration at the contacts?

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