**Primer on Semiconductors: Lecture 5.2 Short Problem**

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1) This problem concerns a Si “isotype” junction at room temperature with the doping profile shown below. Answer the following questions assuming room temperature silicon. Note that the doping in N-type on both sides of the junction.



1a) Sketch the equilibrium energy band diagram

1b) Sketch the electrostatic potential vs. position

1c) Sketch the electric field vs. position

1d) Sketch the electron density vs. position

1e) Sketch the space charge density vs. position.