Name: **Id#**

COE 360, Principles of VLSI Design, Term 002
Pop Quiz# 1

Date: Sunday, Feb. 18

Determine <u>the electron and hole concentrations and the conductivity</u> of a piece of silicon at 300K given that it is doped with Arsenic (pentavalent) at a density of 4×10^{16} atoms/cm^3 and doped with Boron (trivalent) at a density of 4×10^{12} atoms/cm^3. *Assume the following: Electron mobility at 300 K=1500 cm^2/V.s, Hole mobility at 300 K = 475 cm^2/V.s, Intrinsic concentration at 300 K=1.45 \times 10^{10} cm^{-3}* , q= 1.6×10^{-19}