**Homework 7, Chapter 8, Due Feb. 22, 2016**

**Kittel, Chap. 8,**

**problems 1 and 2.**

**Problem 3:** Use σ = μene and remembering how to go from resistance, R, to ρ, the resistivity (A is the cross sectional area, ‘l’ is the length between contacts, and R=ρA/l) Electrical current of 6.4 mA is passed through a 10 mm cube of germanium when 10 mV is applied between two parallel faces. Assuming that the charge carriers are electrons that have a mobility of 0.39 m2/ V-sec,

1. calculate the density of carriers.
2. What is the relaxation time τ if the electron effective mass is 0.12me?