1. PDG (Plummer, Deal and Griffin) Problem 3.3

2. (a) What is the total and marginal (change for last atom added) entropy of mixing for 20,000 atoms of element A substitutionally into 980,000 atoms of B (1,000,000 total sites)?

   (b) If the equilibrium concentration of neutral interstitials in Si is determined to be $10^{12}\text{cm}^{-3}$ at 1000°C and $2.6\times10^9\text{cm}^{-3}$ at 800°C, what are the enthalpy and entropy of formation of the neutral 110 split interstitial (six possible configurations at each lattice site)?

3. Given the charge state locations given in Table 3.3 and a total vacancy concentration (over all charge states) of $C_V^{\text{total}} = 10^{11}\text{cm}^{-3}$ at 1000°C (use this value rather than value from text):

   (a) What is the equilibrium concentration of neutral vacancies?

   (b) What is the total vacancy concentration in silicon doped with $N_{d^+} = 5\times10^{19}\text{cm}^{-3}$.

       (c) Sketch the vacancy concentration as a function of $n/n_i$ on a log-log scale.

4. 