PHYS 321 Ch4 Hwk1 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Calculate the number of vacancies per cubic meter in iron at 850°C. The energy for vacancy formation is 1.08 eV/atom. The density and atomic weight for Fe are 7.65 g/cm3 and 55.85 g/mol, respectively.



2. Which of the following systems (i.e., pair of metals) would you expect to exhibit complete solid solubility? Explain your answers*.*

 *(a) Cr-V*

 *(b) Mg-Zn*

 *(c) Al-Zr*

 (d) Ag-Au

 (e ) Pb-Pt

3. Compute the radius r of an impurity atom that will just fit into an FCC tetrahedral site in terms of the atomic radius R of the host atom (without introducing lattice strains).

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