

NAME:

STUDENT ID:

Problem

- (a) Calculate the number of vacancies per m^3 in Al at 650°C . Given that the energy for vacancy of formation is 0.7 eV/atom , density of Al is 2.7 g/m^3 and its atomic weight is 26.98 g/mol . Boltzmann's constant is $8.62 \times 10^{-5}\text{ eV/K}$.
- (b) State the types of defects in crystal structures.
- (c) The slip systems in FCC metals is $\{111\} \langle 1\bar{1}0 \rangle$. Sketch the (111) plane in a unit cell and show the possible slip directions.