1. What are main types of primary bonding? Give brief explanations and examples for each type?

2. Aluminum has an FCC crystal structure with an atomic weight of 26.98 g/mol. If the density of Aluminum is 2.697 g/cm^3, calculate the radius of its atom in nanometer?

3. Sketch the following directions and planes within a cubic unit cell:
   $[\bar{1}10]$, $(10\bar{2})$, $(1\bar{3}1)$, $[\bar{1}\bar{2}1]$, $(0\bar{1}\bar{1})$, and $[1\bar{3}3]$

4. Sketch the following planes and directions in HCP unit cell:
   $(1\bar{1}00)$, $[1\bar{2}10]$, (0001), and $[\bar{2}111]$

5. Calculate the atomic radius for aluminum given that Al has an FCC crystal structure and a linear density of 3.5 X 10^8 atom/m along [110]? Calculate the planar the density for the (111) plane.

Avogadro's number, N_A=6.023 x 10^{23} atoms/mol