

- 1 – Determine the edge length (in mm) of a cube that holds Avogadro's number of Si atoms

20pts

 mm

- 2 – Calculate the Si intrinsic carrier concentration at the edges of the Industrial temperature spec range (-40 °C to 85 °C)

20 pts

 @ -40°C @ 85°C

- 3 – Research

Identify one additional common Si donor atom and one additional common Si acceptor atom

20pts

 Acceptor Donor

- 4 – Calculate the resistivity of n-type Si doped at 1×10^{17} and p-type Si doped at 2×10^{18} (assume RT) – include all units in your analysis 20pts

- 5 – Research

Determine the resistance (end to end) of an n-type silicon structure with sheet resistance of $20 \Omega/\square$, $W = 2 \mu\text{m}$, $L = 220 \mu\text{m}$ 20 pts

