

UM-SJTU JI Summer 2019 VE 320 Quiz 4

Name:

Student ID:

1. From the fabrication point of view, why is Si the dominant material in the semiconductor industry? Please list at least 2 reasons.

2. (a) A silicon pn junction at $T = 300$ K is reverse biased at $V_R = 8$ V. The doping concentrations are $N_a = 5 \times 10^{16} \text{ cm}^{-3}$ and $N_d = 5 \times 10^{15} \text{ cm}^{-3}$. Draw the band diagram of the pn junction, and determine x_n , x_p , W , and $|E_{\max}|$. Please provide the process of derivation.