

1. An NPN BJT is operating in active mode. The base-to-emitter voltage is 0.72V, the base current is 0.15mA, and the collector current is 12mA. Find the value of I_S and β .

$I_S =$ _____

$\beta =$ _____

2. The same device is operating in Saturation mode with $\alpha_R = 0.8$. If the base-to-emitter voltage is 0.75V and the collector-to-emitter voltage is .15V find the value for β_{forced} .

$\beta_{\text{forced}} =$ _____

3. Use the BJT exponential equations to solve the circuit below. Assuming Active Mode find I_C and V_C , V_E , and V_B . Verify active mode is correct.

