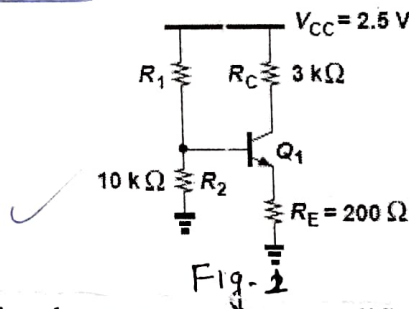


Note: Attempt all questions

1. Explain the early effect and what cause the early effect? 3
2. Derive the BJT terminal currents using the Ebers Moll Model. 5
3. A voltage divider circuit is designed for a collector current of 0.25 mA. Assume, collector reverse saturation current (I_S) = 6×10^{-16} A, $\beta = 100$, and $V_A = \infty$. 5

find R_1 

R_1
 $V_T = 26 \text{ mV}$

4. Design the small signal common emitter amplifier circuit for the given figure. Find the input impedance, output Impedance, Voltage gain (V_o/V_i) and overall Voltage gain (V_o/V_s). (3+1+2+1)

