C1, C2 & C3 are very large \( I_c = 10 \text{mA} \) \( V_T = 20 \text{mV} \)

The transistor is an ideal NPN transistor

**a-)** Find upper cutoff frequency of the amplifier with \( L = 0 \).

**b-)** Extend the upper cutoff frequency for maximum BW by choosing an appropriate value for \( L \).

Hint = Please make the necessary simplifying assumptions.

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9. \( g_m = 20 \text{mS} \) \( C_{gs} = 0.2 \text{pF} \) \( C_{gd} = 0.1 \text{pF} \)

**a-)** Find \( L \) to make \( f_{res} = 50 \text{MHz} \)

**b-)** Find the input capacitance of the circuit

**c-)** Estimate upper cutoff frequency from the result in (b)