QUIZ NO. 7

NAME_____Score_____/10

Assume that Q1 and Q2 and the resistors R_C of the differential amplifier shown are matched. If $\beta_F = 100$, $V_t = 25\text{mV}$, $V_{BEQ} = 0.6\text{V}$, and $V_A = \infty$, find (a.) the numerical value of I_{C1} and I_{C2} if $v_1 = v_2 = 0$. (b.) For the rest of the problem assume that $I_{C1} = I_{C2} = 0.5\text{mA}$ and find the numerical value of v_{C1}/v_{id} where $v_{id} = v_1 - v_2$. (c.) Find the numerical value of v_{C1}/v_{ic} where $v_{ic} = v_1 = v_2$. (d.) Find the numerical value of the differential input resistance defined as,

$$R_{id} = v_{id}/i_{in} .$$

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