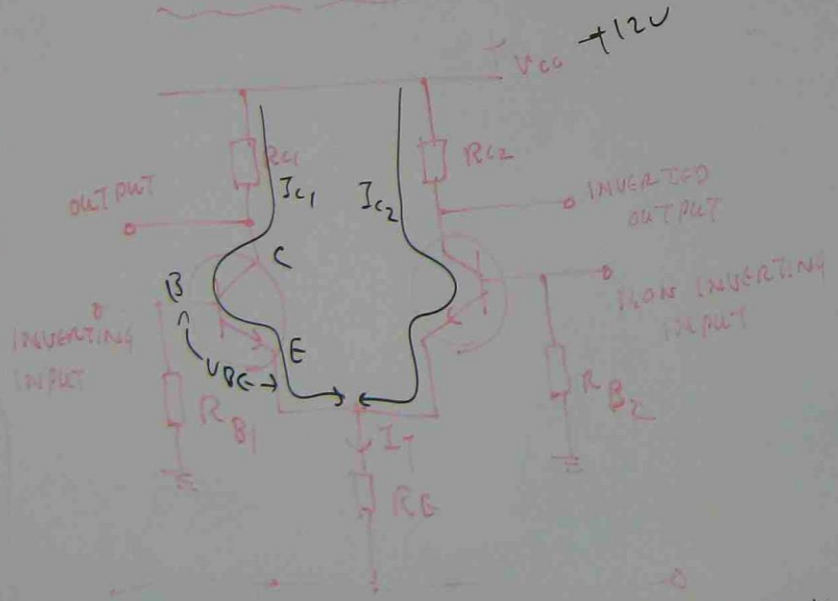
DIFFERENTIAL AMPLIFIER

BJT DIFFERENTIAL AMPLIFIER



Pb. IN ABOVE CIRCUIT IF

$R_{C1} = 2.2\,K$, $R_{C2} = 2.2K$

$R_{B1} = 33K$, $R_{B2} = 33K$

$R_E = 2.7\,K$

$V_{CC} = +12V$, $V_{EE} = -12V$ CALCULATE

(a) I_{B1} (b) V_{E1}, V_{E2}

(c) I_T (d) I_{C1}, I_{C2} (e) V_{C1}, V_{C2}

(a)

$V_{B_1} = V_{B_2} = 0$

(b) $V_{E_1} = V_{E_2} = V_{BE} = 0.6\,V$

(c) $I_T = \dfrac{V_{E1} - V_{EE}}{R_E} = \dfrac{(-0.6) - (-12)}{2.7 \times 10^3} = 4.22\,mA$

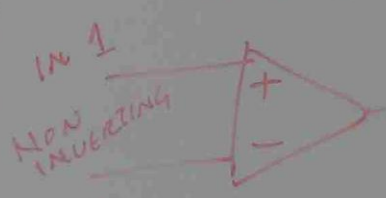
(d) $I_{C_1} = I_{C_2} = \dfrac{I_T}{2} = \dfrac{4.22}{2} = 2.11\,mA$

(e) $V_{C_1} = V_{C_2} = V_{CC} - I_{C_1} \times R_C = 12 - 2.11 \times 10^{-3} \times 2.2 \times 10^3$

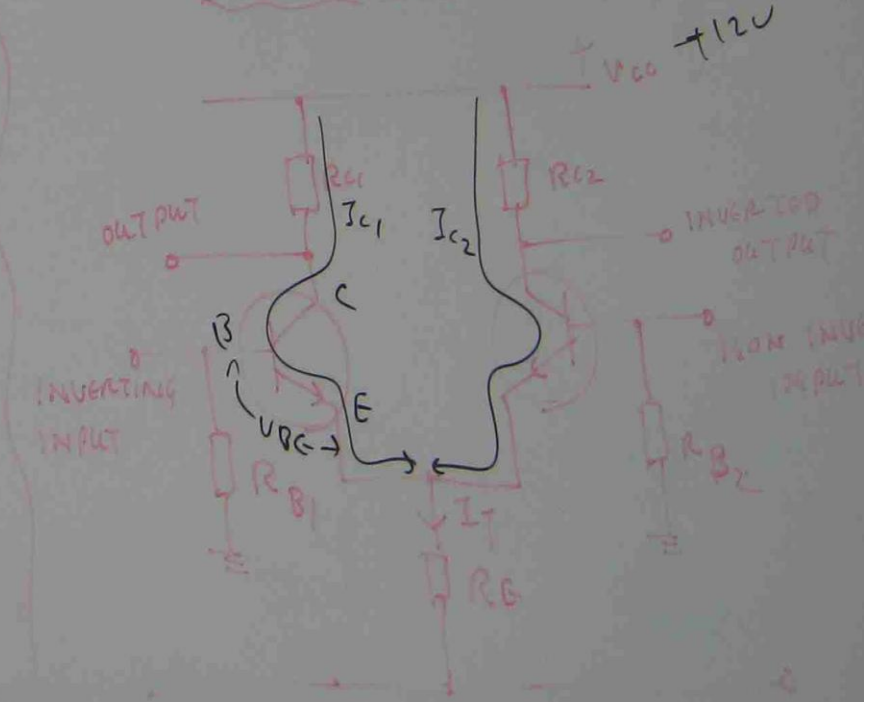
$= 7.38\,V$

COUPLING METHOD	CHARACTERISTICS
CAPACITIVE	PROVIDE AC COUPLING BLOCK DC & LOW FREQUENCIES
TRANSFORMER	PROVIDE AC COUPLING IMPEDANCE MATCHING BLOCK DC REDUCE LOW FREQ: DISTORTION BULKY
DIRECT	PROVIDE DC & AC COUPLING GOOD LOW FREQUENCY RESPONSE DC STABILITY PROBLEM

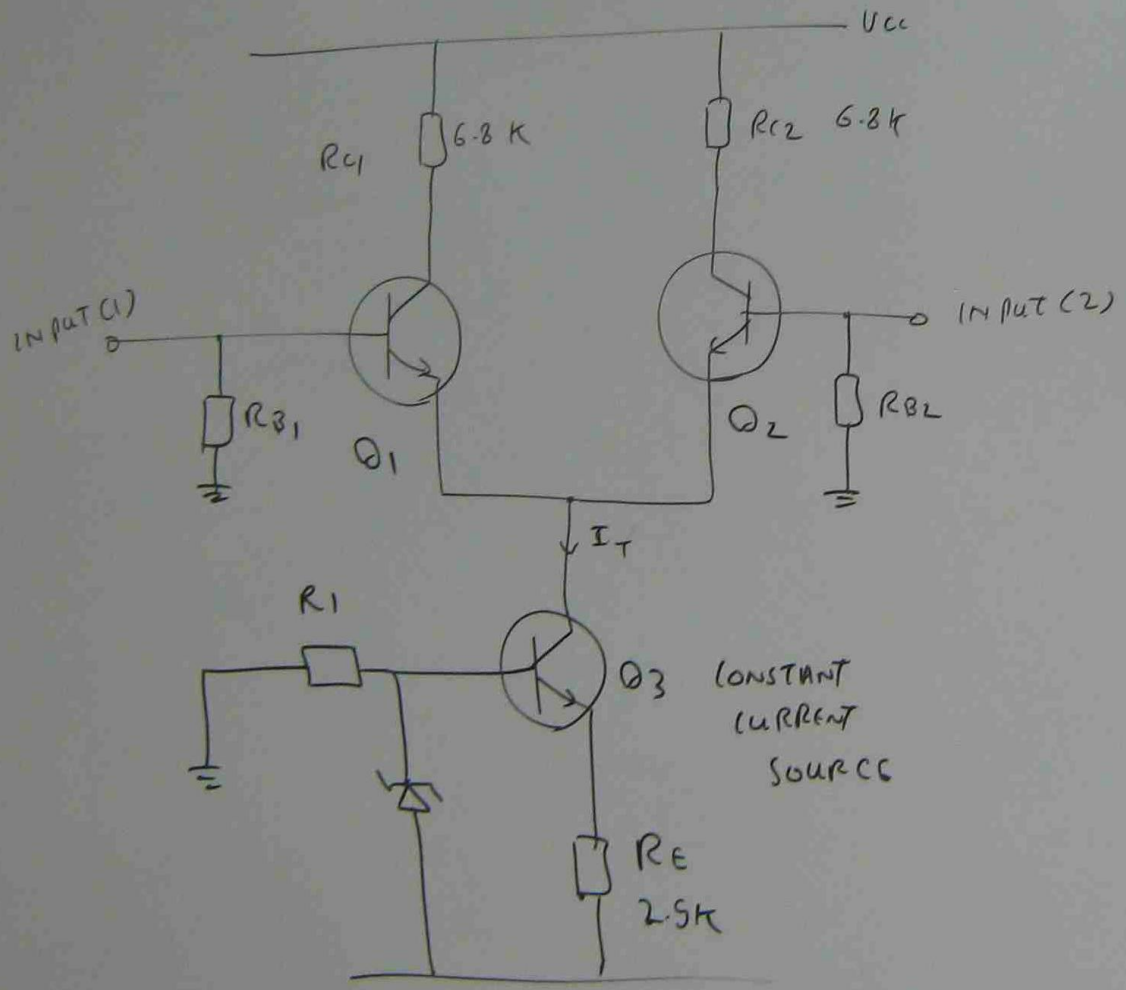
DIFFERENTIAL AMPLIFIER



BJT DIFFERENTIAL AMPLIFIER



DISCRETE DIFFERENTIAL AMPLIFIER WITH CONSTANT CURRENT SOURCE



By providing constant current source CMRR (common mode rejection ratio) is improved