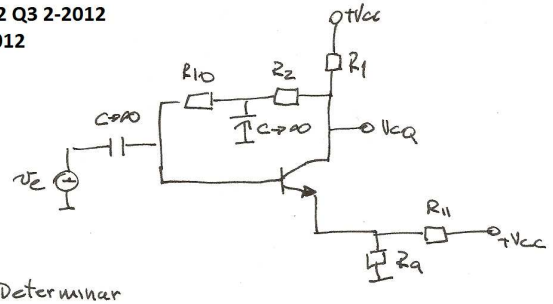
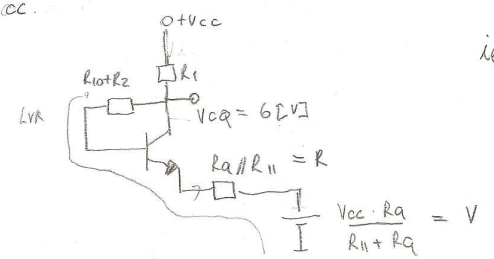
PAUTA P2 Q3 2-2012
29/10/2012
AMM



$V_{cc} = 12V$
$h_{fe} = 100$
$R_1 = 1K$
$R_2 = 10K$
$R_3 = 10K$
$R_{10} = 10K$
$R_{11} = 2K2$

Determinar
R_a para $V_{cq} = 6\,[V]$.

cc.



$$i_e = \frac{V_{cc} - V_{cq}}{R_1} = \frac{6}{1K} = 6mA$$ ✓ 1pto

$V_{cq} = 6\,V$

$V_{cq} = I_{BQ}(R_2 + R_{10}) + V_{BE} + I_{BQ}(1+h_{fe})\cdot R + V$ → 4pto

$I_{BQ}(1+h_{fe}) \simeq \frac{V_{cq}}{R_1}$

$6 = \frac{6}{100}\cdot 20 + 0{,}7 + 6\cdot R + V$

$V = 5{,}18 - 6R$

$V = V_{cc}\frac{R_a}{R_{11}+R_a}$, $R = \frac{R_a \cdot R_{11}}{R_a + R_{11}}$ Resolución 1pto

$V_{cc}\cdot R_a = (R_a + R_{11})\cdot 5{,}18 - 6\cdot R_a\, R_{11}$

$R_a = \frac{R_{11}\cdot 5{,}18}{V_{cc} + 6R_{11} - 5{,}18} = \frac{2{,}2\cdot 5{,}18}{12 + 13{,}2 - 5{,}18} \Rightarrow$ $\boxed{R_a \simeq 570\,\Omega}$ ✓ 1pto

Zona lineal:

$V_{ce} = V_{cq} - I_{eq}\cdot(R_a // R_{11}) - V_{cc}\cdot R_a/(R_a + R_{11}) = 0{,}81\,[V] > V_{ce\,sat}$.

$\Rightarrow$ el transistor está en zona lineal. ✓ 1pto