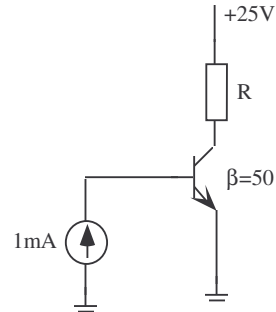


Problemes d'Electrònica I. Full 5

4^{rt} Curs de Física

Nota : Si l'enunciat del problema no indica el contrari, preneu $V_{BE,ON} = 0.7 \text{ V}$, $V_{BE,SAT} = 0.8 \text{ V}$, i $V_{CE,SAT} = 0.2 \text{ V}$

1- En el següent circuit determinau les tensions i els corrents al transistor en funció del valor de R.

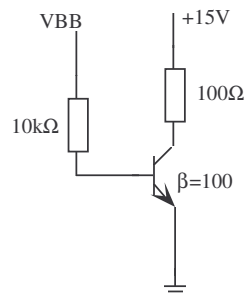


2- Determinau els corrents i les tensions al circuit següent si

a) $V_{BB}=0\text{V}$

b) $V_{BB}=5\text{V}$

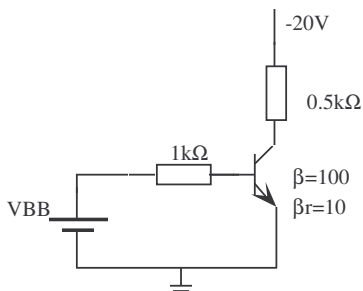
c) $V_{BB}=20\text{V}$



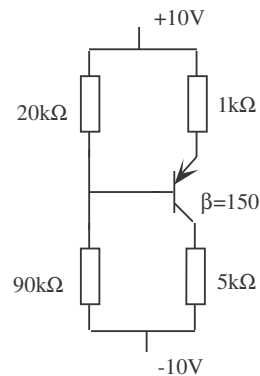
3- Determinau tensions i corrents si

a) $V_{BB}=5\text{V}$

b) $V_{BB}=1\text{V}$



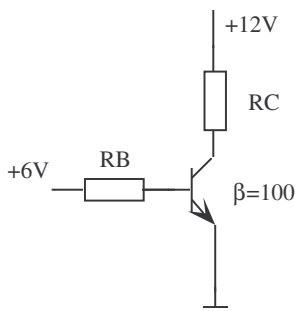
4- Determinau les tensions i els corrents al transistor de la figura.



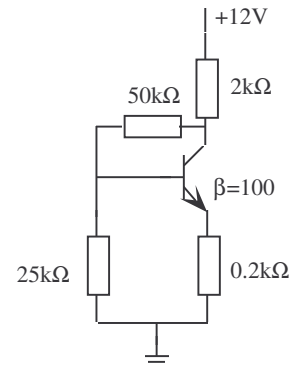
5- En el circuit, considerant que $V_{BE,ON} = 0.7 \text{ V}$, determinau

a) R_C i R_B del circuit per tal que $I_C=12\text{mA}$ i $V_{CE}=6\text{V}$

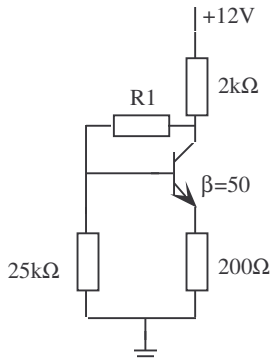
b) Repetiu el problema si afegim una resistència d'emisor de 200Ω .



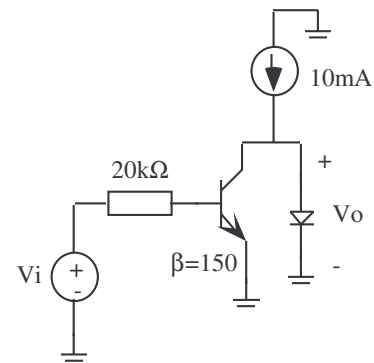
6- Determinau les tensions i els corrents al transistor de la figura si $V_{CE,SAT} = 0.2 \text{ V}$, i $V_{BE,ON} = 0.7 \text{ V}$.



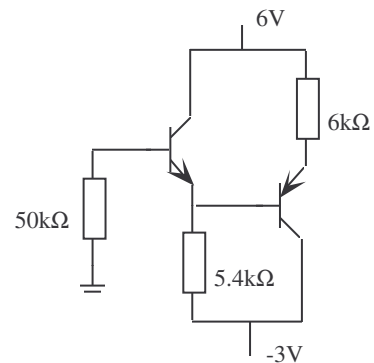
7- Determinau R_1 per tal que $I_E = 2 \text{ mA}$. Considerau que $V_{CE,SAT} = 0.2 \text{ V}$, i $V_{BE,ON} = 0.7 \text{ V}$.



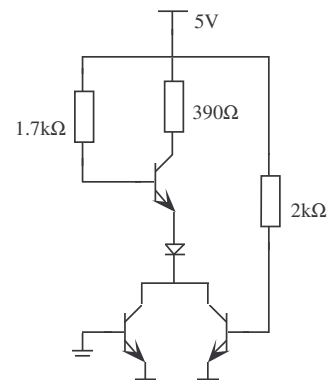
8- Determinau $V_o(V_i)$ considerant $V_{BE,ON} = 0.7 \text{ V}$, $V_{CE,SAT} = 0.2 \text{ V}$ i $V_\gamma = 0.7 \text{ V}$



9- Determinau el punt de treball dels dos transistors de la figura suposant que $\beta = 100$, $V_{BE,ON} = 0.7 \text{ V}$, $V_{EB,ON} = 0.7 \text{ V}$. Repetiu els calculs suposant β infinita i compareu els resultats.



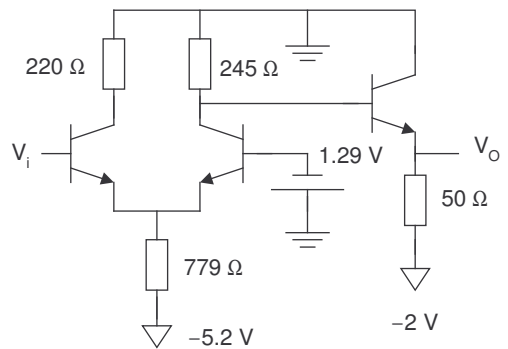
10- Estimau el corrent al diode si $\beta = 10$, $V_\gamma = 0.7 \text{ V}$, $V_{BE,ON} = 0.7 \text{ V}$, $V_{BE,SAT} = 0.8 \text{ V}$, $V_{CE,SAT} = 0.2 \text{ V}$



11- En el circuit si $\beta=200$ i $V_{BE,ON}=0.8V$

(a) Calculau V_o si $V_i=-2V$.

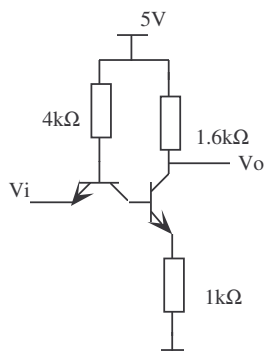
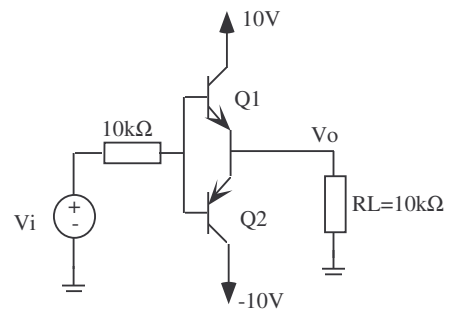
(b) Repetiu si ara $V_i=-0.9V$



12.- Dibuixau $V_o(t)$ si $V_i(t) = 12 \sin \omega t$.

$V_{CE,SAT} = 0.2 V$, $V_{EC,SAT} = 0.2 V$

$V_{BE,ON} = 0.7 V$, $V_{EB,ON} = 0.7 V$, $\beta = 100$



13- En el circuit determinau V_o pels valors de V_i següents :

(a) $V_i = 0.2 V$

(b) $V_i = 4 V$

Preneu $V_{CE,SAT} = 0.1 V$, $V_{BE,ON} = 0.7 V$, $V_{BC,ON} = 0.6 V$, $\beta_F=100$ i $\beta_R=5$.