Practice Problem Set #2

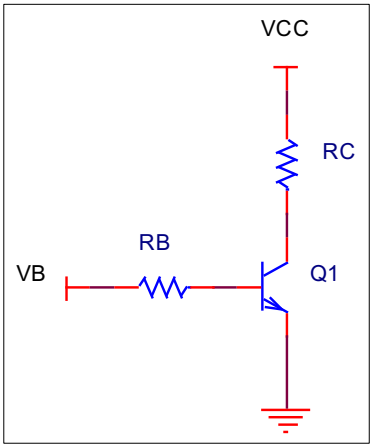
Biasing Basic-2

ENEL469: Analog Electronics

Consider the following circuits where $\beta = 100$, $|V_{BE(ON)}| = 0.7V$. Assume $|V_{CE}| = 0.3V$ if the collector base junction is forward biased. For all the following circuits (A-N), determine I_B, I_C, V_{CE}, V_{CB} and the type of biasing applied to the BE and CB junctions. If needed use the following transistor equations, $I_C = \beta I_B$, and $I_E = I_C + I_B$.

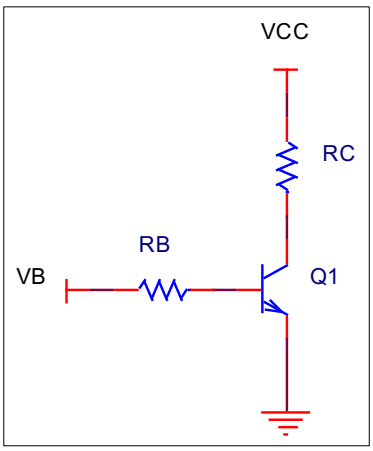
A) Use the following given values

$V_{CC} = 10$ V, $V_B = 4$ V,
$R_B = 66$ kΩ, and $R_C = 1$ kΩ.



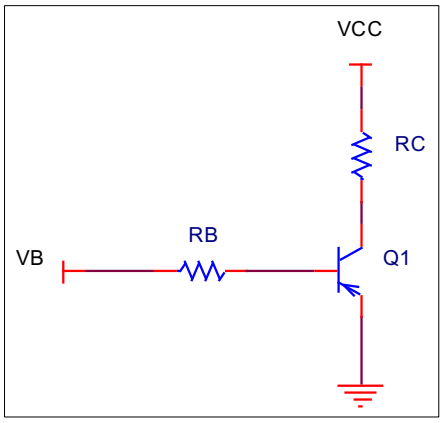
B) Use the following given values

$V_{CC} = -10$ V, $V_B = 4$ V,
$R_B = 66$ kΩ, and $R_C = 1$ kΩ.



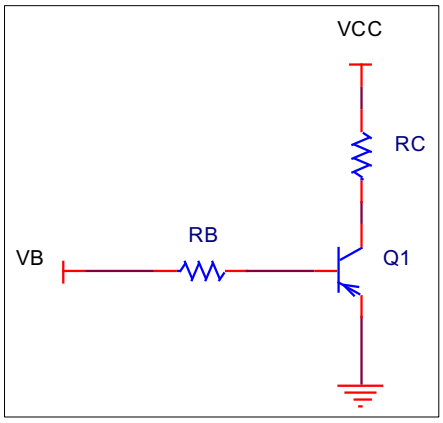
C) Use the following given values

V_{CC} = 10 V, V_B = –4 V,
R_B = 66 kΩ, and R_C = 1 kΩ.



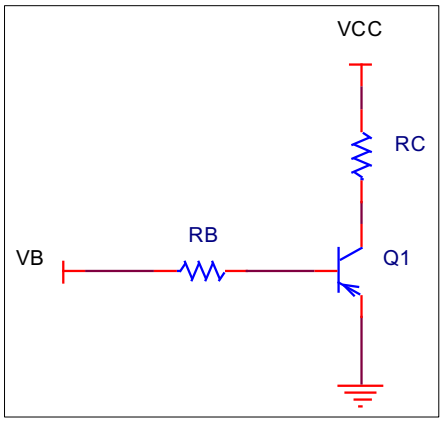
D) Use the following given values

V_{CC} = 10 V, V_B = 4 V,
R_B = 66 kΩ, and R_C = 1 kΩ.



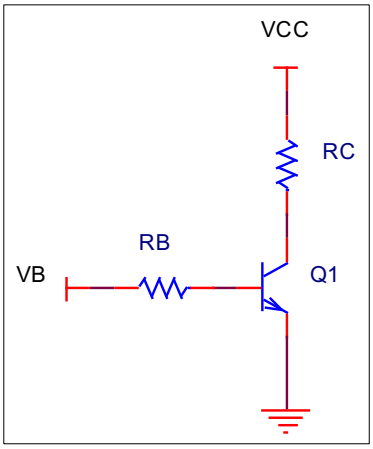
E) Use the following given values

V_{CC} = –10 V, V_B = –4 V,
R_B = 66 kΩ, and R_C = 1 kΩ.



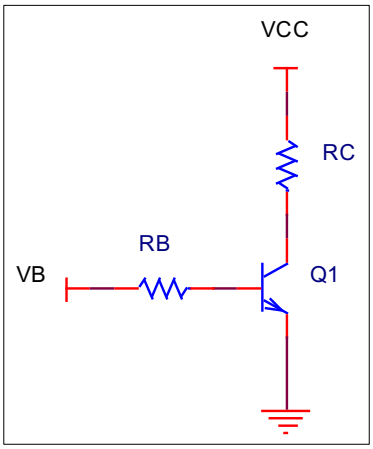
F) Use the following given values

V_{CC} = 10 V, V_B = 4 V,
R_B = 0, and R_C = 1 kΩ.



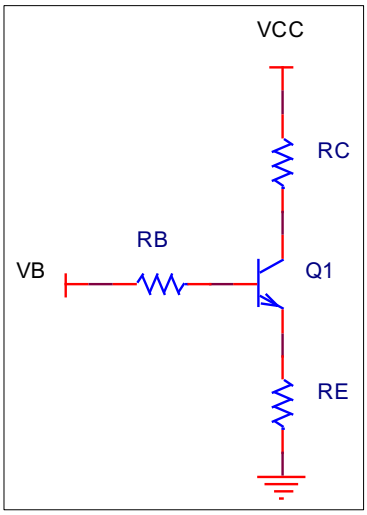
G) Use the following given values

V_{CC} = 10 V, V_B = 4 V,
R_B = 66 kΩ, and R_C = 0.



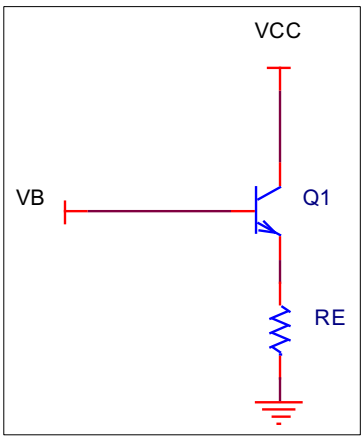
H) Use the following given values

V_{CC} = 10 V, V_B = 4 V,
R_B = 0, R_C = 1 kΩ, and R_E = 1 kΩ.



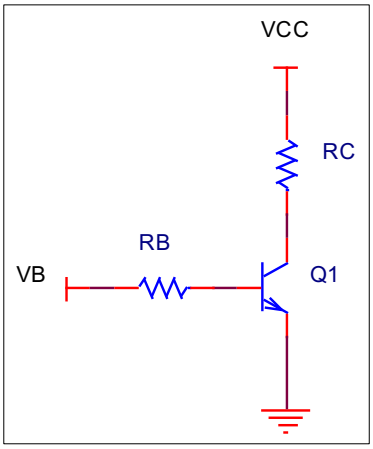
I) Use the following given values

V_{CC} = 10 V, V_B = 4 V and R_E = 1 kΩ.



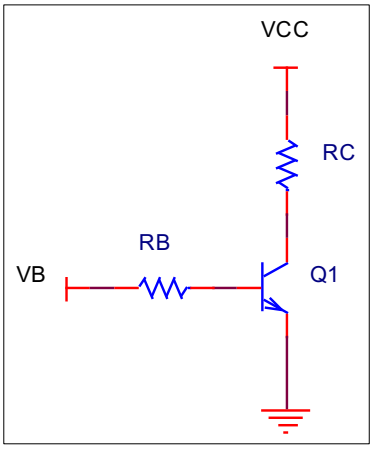
J) Use the following given values

V_{CC} = 10 V, V_B = 4 V,
R_B = 11 kΩ and R_C = 1 kΩ.



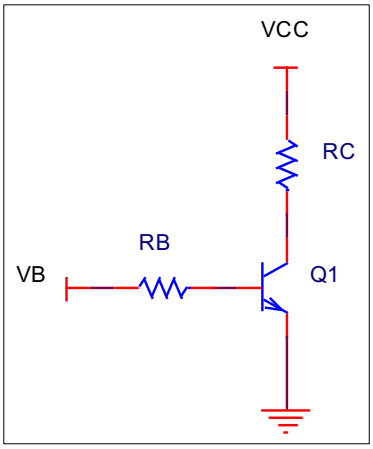
K) Use the following given values

V_{CC} = 10 V, V_B = 4 V,
R_B = 66 kΩ and R_C = 5 kΩ.



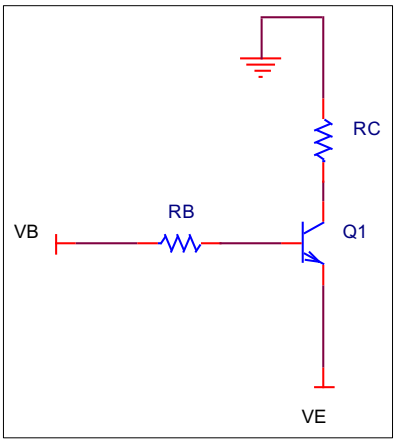
L) Use the following given values

$V_{CC} = 10$ V, $V_B = 4$ V,
$R_B = 11$ kΩ and $R_C = 200$ Ω.



M) Use the following given values

$V_E = -10$ V, $V_B = 4$ V,
$R_B = 66$ kΩ and $R_C = 1$ kΩ.



N) Use the following given values

$V_{CC} = 5$ V, $V_E = -5$ V, $V_B = 4$ V,
$R_B = 66$ kΩ and $R_C = 1$ kΩ.