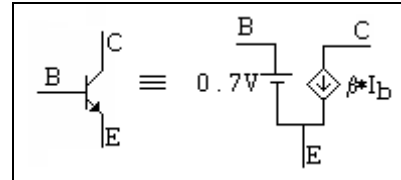
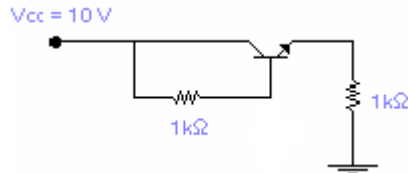


EE2032 Electronics Quiz#5

Mar. 20, 2019

1. For the circuit below, assume that the transistor works in the active region and $\beta=20$. Find the currents and voltages of the transistor. Note: Use the equivalent circuit shown for the transistor.

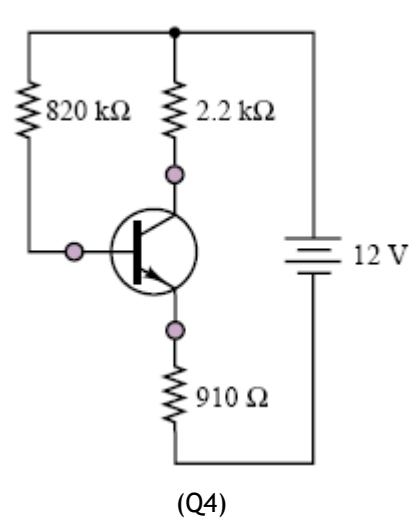
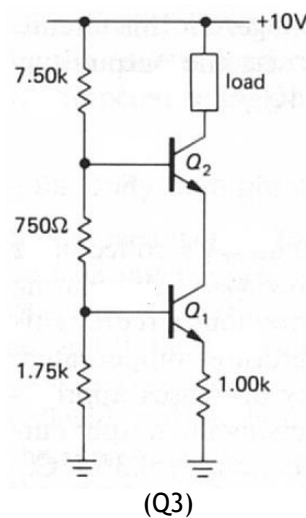
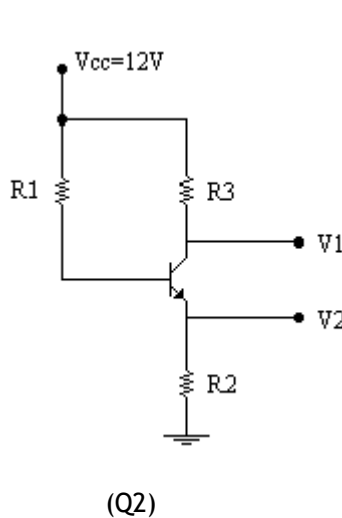


2. For the circuit shown the transistor has $\beta=100$. Assume the transistor works in the active region.

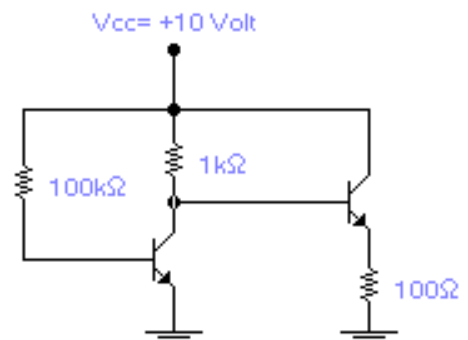
- For $R_1=100\text{ k}\Omega$, $R_2=100\text{ }\Omega$, $R_3=470\text{ }\Omega$. Find the transistor currents, and the voltages V_1 and V_2 .
- To obtain $V_1=9\text{ V}$ and $V_2=3\text{ V}$, suggest suitable resistor values. For this choice what are the transistor currents.

3. In the circuit shown the transistors operate in the active region. Neglect the base currents and find V_{b1} and V_{b2} . Then find V_{e1} and V_{e2} . Finally find I_{e1} and the load current (I_{c2}). (Note: Since the base currents are neglected, collector currents are equal to emitter currents.)

4. Given the circuit, determine the currents (I_b , I_c , I_e), and, the voltages (V_b , V_c , V_e) of the transistor. Assume the BJT has $\beta = 100$. In what region is the transistor?



6. For the circuit in the figure, transistors have $\beta=50$ and $V_{CE(sat)} = 0.2\text{ V}$. Find all I_C currents and V_{CE} voltages (do not ignore base currents).



7. We would like to realize the following characteristics with the circuit given. The transistor has $\beta=100$. Find $V_{ce(sat)}$, V_{CC} , and R values.

