

ENEE2303 CH4 Homework Problems

4.20 Measurements on the circuits of Fig. P4.20 produce labeled voltages as indicated. Find the value of β for each transistor.

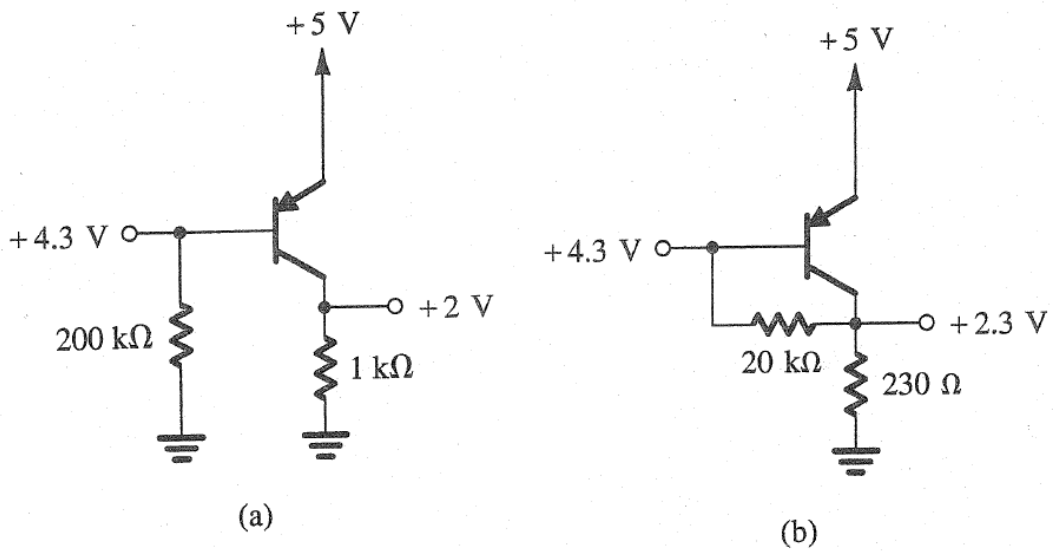
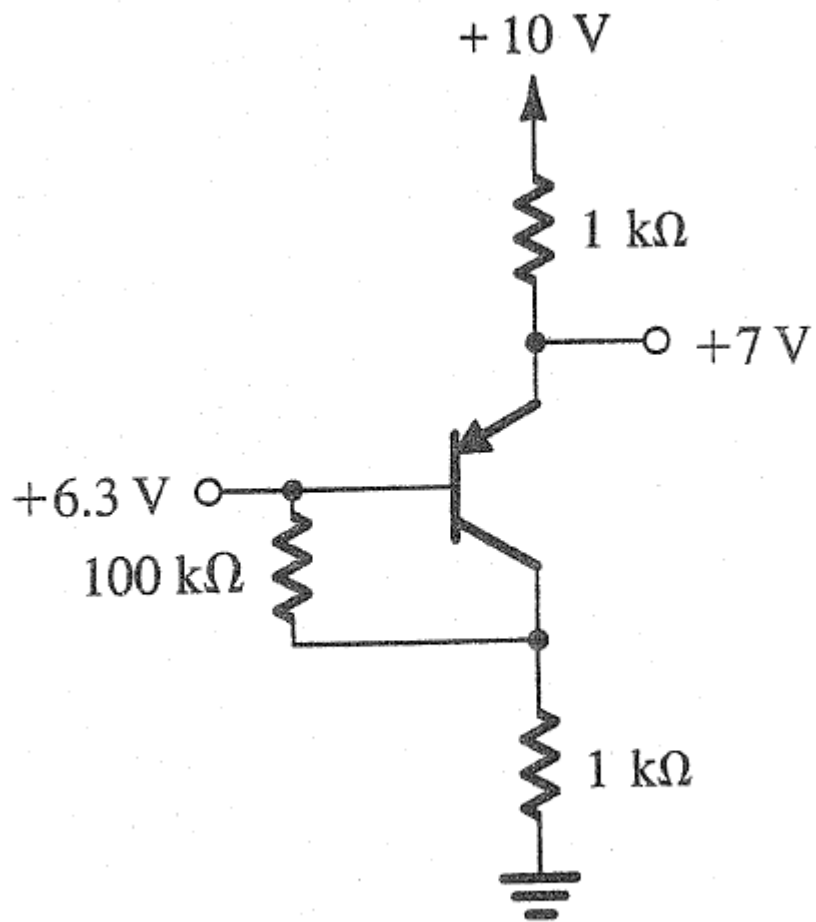
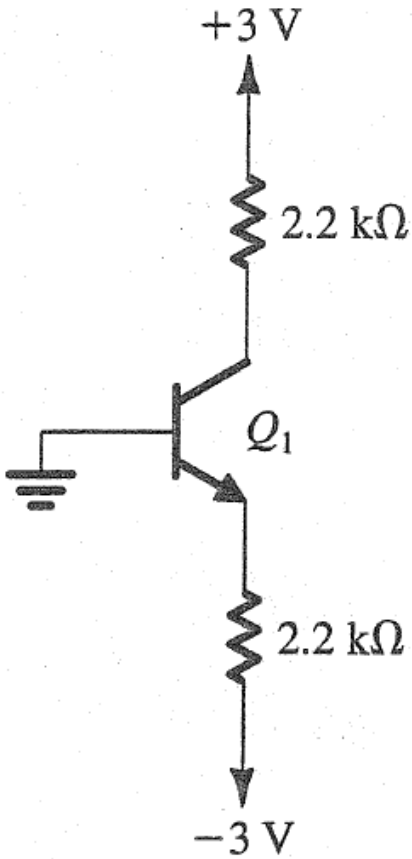


Figure P4.20

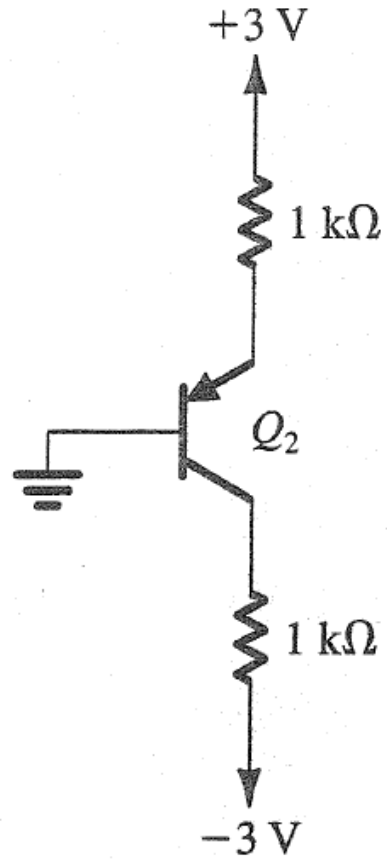


(c)

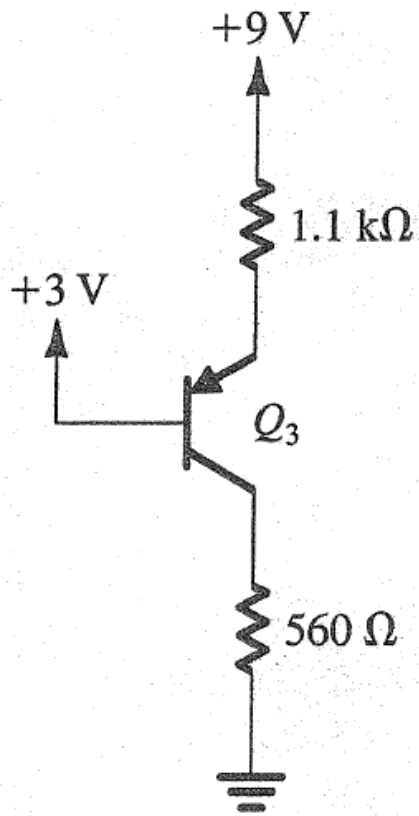
4.26 For each of the circuits shown in Fig. P4.26, find the emitter, base, and collector voltages and currents. Use $\beta = 30$, but assume $|V_{BE}| = 0.7 \text{ V}$ independent of current level.



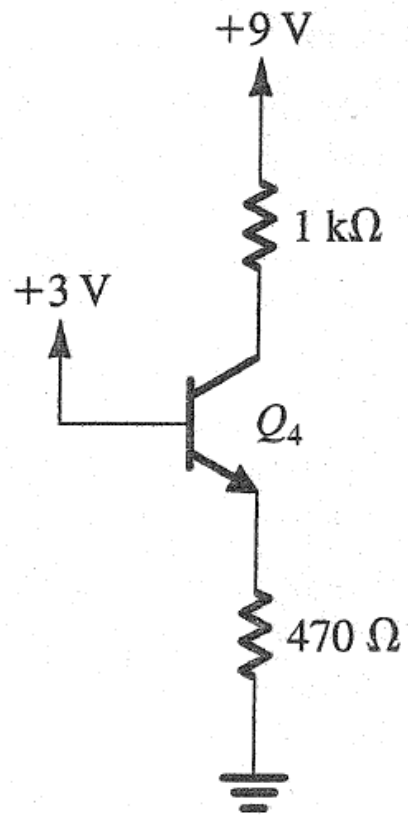
(a)



(b)



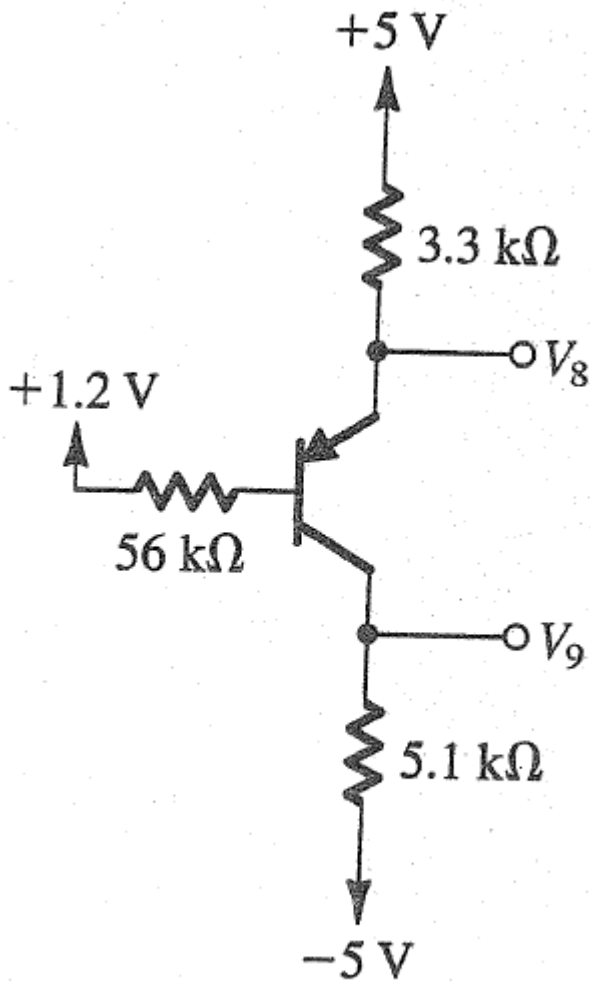
(c)



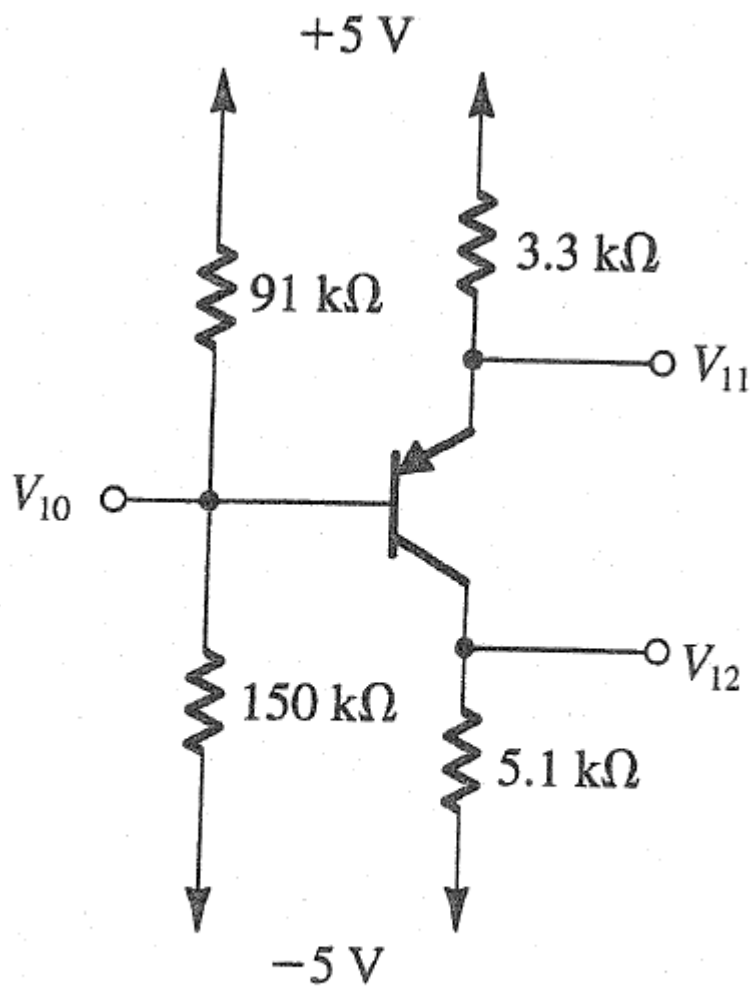
(d)

Figure P4.26

4.46 For the circuits in Fig. P4.46, find values for the labeled node voltages and branch currents. Assume β to be very high and $|V_{BE}| = 0.7\text{V}$.



(d)



(e)

Figure P4.46

*4.50 For the circuit shown in Fig. P4.50, find the labeled node voltages for:

(a) $\beta = \infty$

(b) $\beta = 100$

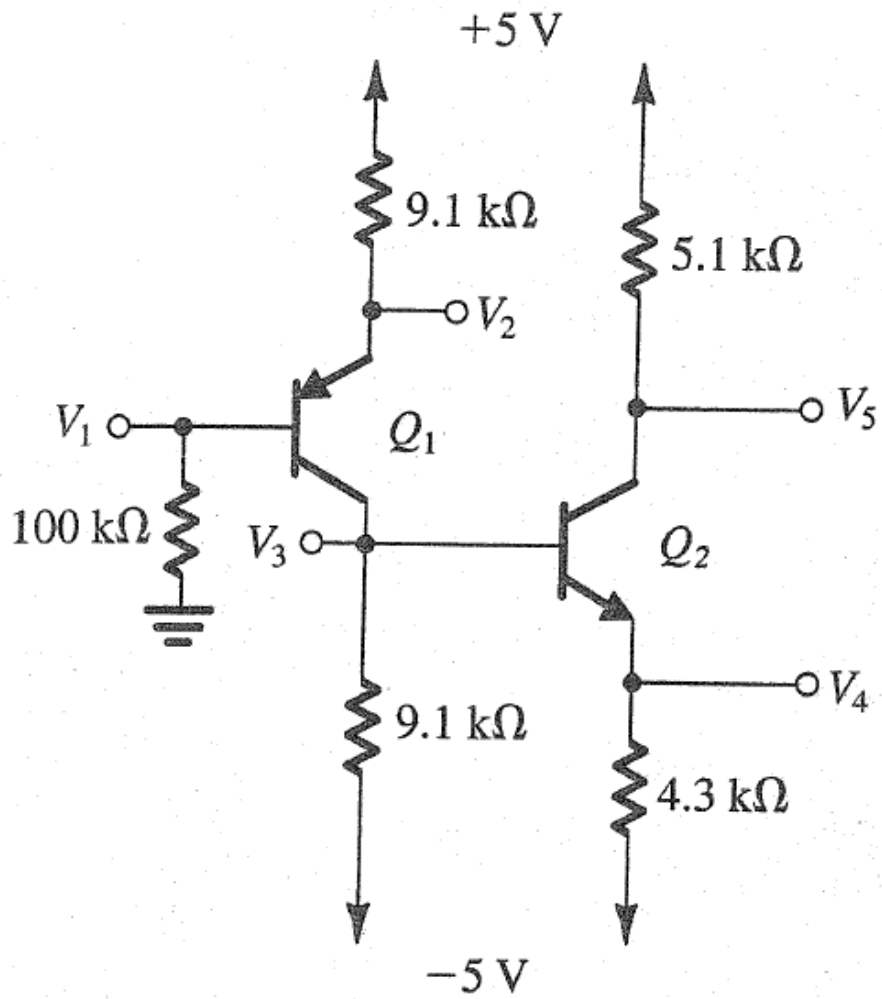


Figure P4.50

D *4.51 Using $\beta = \infty$, design the circuit shown in Fig. P4.51 so that the bias currents in Q_1 , Q_2 , and Q_3 are 2 mA, 2 mA, and 4 mA, respectively, and $V_3 = 0$, $V_5 = -4$ V, and $V_7 = 2$ V. For each resistor, select the nearest standard value utilizing the table of standard values for 5% resistors in Appendix G. Now, for $\beta = 100$, find the values of V_3 , V_4 , V_5 , V_6 , and V_7 .

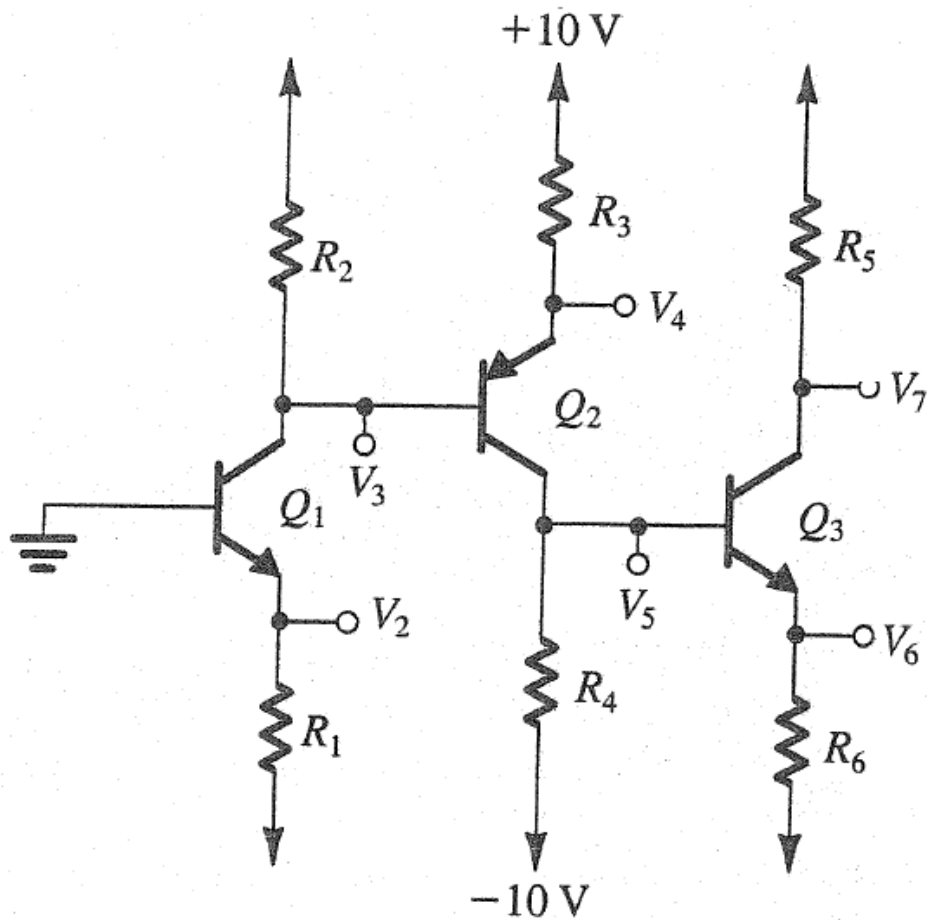


Figure P4.51