EXERCISE/TUTORIAL 1[1]

Complete the following questions on a separate page(s). Show all formulae and calculations. Your teacher may require you to submit this exercise for assessment so neat work will assist.

1. a) Calculate the collector current, the base current, and the collector-emitter voltage for Figure 1.
   b) Draw and label the load line and mark the Q point.

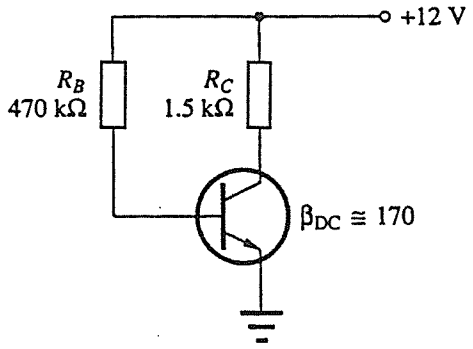

Figure 1

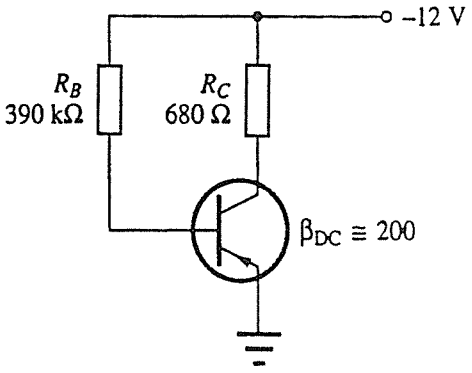

Figure 2

2. a) Calculate the collector current, the base current, and the collector-emitter voltage for Figure 2.
   b) Draw and label the load line and mark the Q point.

3. a) Calculate the collector current, the base current, and the collector-emitter voltage for Figure 3.
   b) Draw and label the load line and mark the Q point.

4. a) Calculate the collector current, the base current, and the collector. emitter voltage for Figure 4.
   b) Draw and label the load line and mark the Q point.

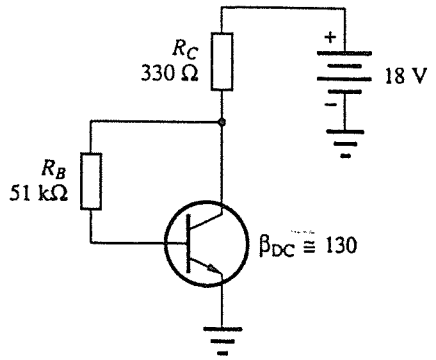

Figure 3

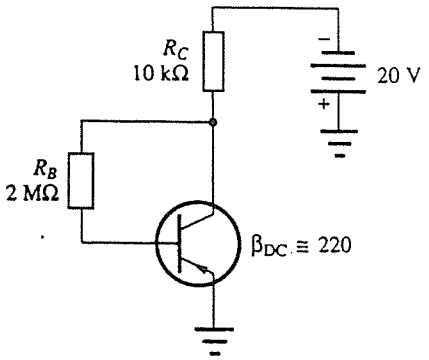

Figure 4

Note for Q3 & 4 use: $I_C = \dfrac{(V_{CC} - V_{BE})}{R_C + (R_B/\beta_{DC})}$

[1] Source: *Exploring Electronic Devices* by M Hazen, Saunders College Publishing, 1991.

5. a) Calculate the base voltage, emitter voltage, collector current, and collector-emitter voltage for Figure 5.
   b) Draw and label the load line and mark the Q point.

6. a) Calculate the base voltage, emitter voltage, collector current, and collector-emitter voltage for Figure 6.
   b) Draw and label the load line and mark the Q point.

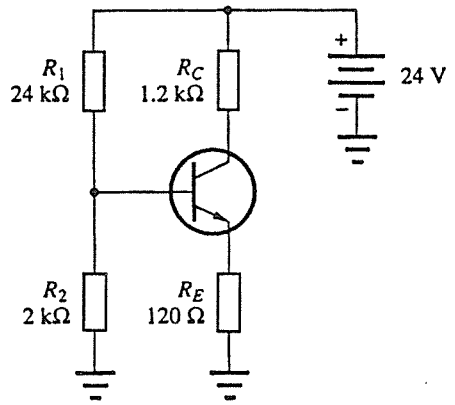

Figure 5

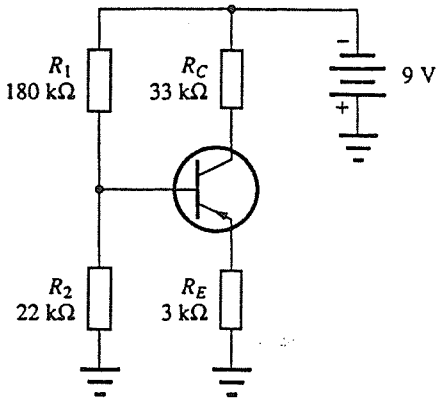

Figure 6

7. Calculate the collector current, and the collector-emitter voltage for Figure 7.

8. Calculate the quiescent collector current, and the quiescent collector-emitter voltage for Figure 8.

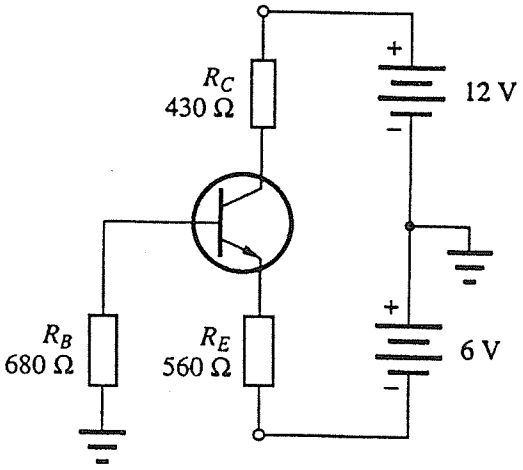

Figure 7

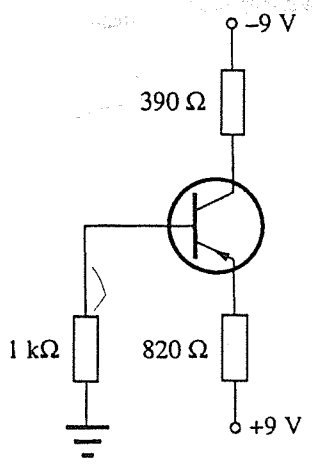

Figure 8