Lab 5
Transistor Introduction

Transistor Operating Regions

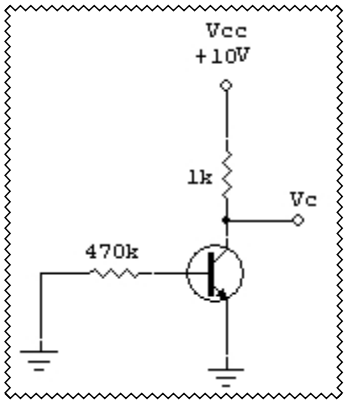

Fig.1

Cut-Off

1. Assemble the circuit in Fig. 1:
2. Measure the following values:

I_B = _____

I_C = _____

V_C = _____

3. What controls the collector current?

Saturation

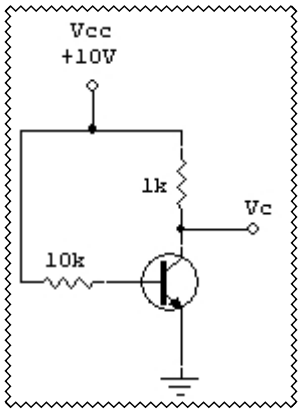

Fig. 2

4. Assemble the circuit in Fig. 2; assume that $\beta = 200$:
5. Calculate the following values:

I_B = _____

I_C = _____

V_{RC} = _____

V_C = _____

6. Are there illogical values in Step 5? If so, is the transistor saturated?
7. Calculate collector current:

I_C = _____

8. Measure the following values:

I_C = _____

V_C = _____ (Hint: must be very low)

I_B = _____ (The current will be very low)

Active Transistor

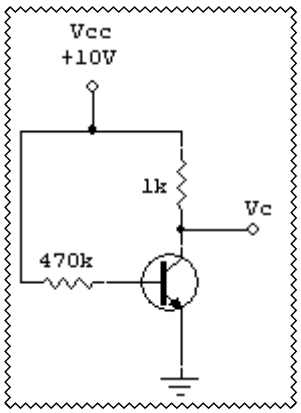

Fig. 3

9. Assemble the circuit in Fig. 3; assume the $\beta = 200$

10. Calculate the following values:

I_B = _____

I_C = _____

V_{RC} = _____

V_C = _____

V_{CE} = _____

11. Is the transistor active?

12. Measure the following values:

V_{BE} = _____

V_C = _____

I_B = _____

I_C = _____

β = _____

13. What causes the variations between the calculated values and measure values in step 12?