

HW7 Book Exercises:

6.15 Measurements of V_{BE} and two terminal currents taken on a number of *npn* transistors operating in the active mode are tabulated below. For each, calculate the missing current value as well as α , β , and I_S as indicated by the table.

Transistor	a	b	c	d	e
V_{BE} (mV)	700	690	580	780	820
I_C (mA)	1.000	1.000		10.10	
I_B (μ A)	10		5	120	1050
I_E (mA)		1.020	0.235		75.00
α					
β					
I_S					

6.51 The transistor in the circuit of Fig. P6.51 has a very high β . Find V_E and V_C for V_B (a) +2.0 V, (b) +1.7 V, and (c) 0 V.

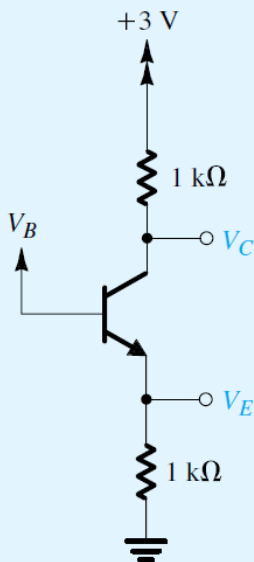


Figure P6.51

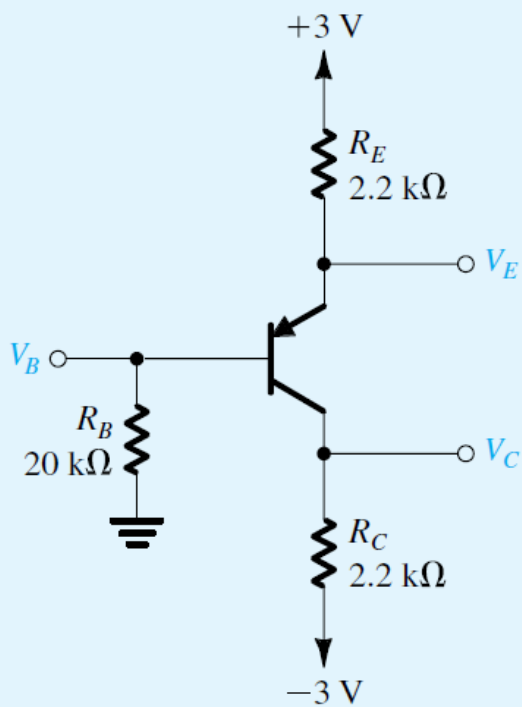


Figure P6.58

6.59 In the circuit shown in Fig. P6.58, the transistor has $\beta = 50$. Find the values of V_B , V_E , and V_C , and verify that the transistor is operating in the active mode. What is the largest value that R_C can have while the transistor remains in the active mode?