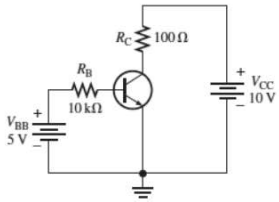
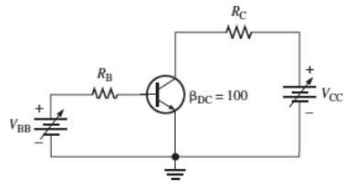
Example for Transistor's Parameters

Problem 1: Determine I_B, I_C, I_E, V_{BE}, V_{CE}, and V_{CB} in the circuit given below. The transistor has a β_{DC} = 150.

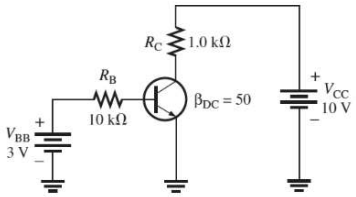


Example for Current Gain

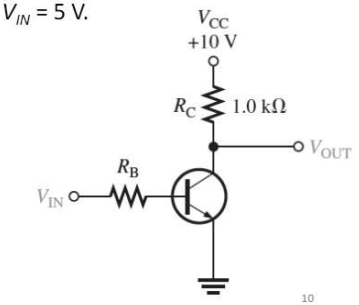
Problem 2: Sketch an ideal family of collector curves for the shown transistor with β_{DC} = 100 for I_B varying from 5 μA to 25 μA.



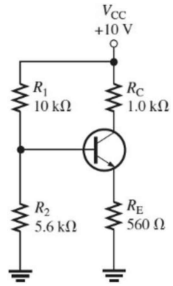
Problem 1: Determine whether or not the following BJT transistor is in saturation. Assume $V_{CE(sat)}$=0.2 V.



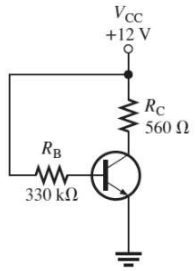
Problem 2: (a) For the transistor circuit given below, what is V_{CE} when V_{IN} =0 V?
(b) What minimum value of I_B is required to saturate this transistor if β_{DC} is 200? Neglect $V_{CE(sat)}$.
(c) Calculate the maximum value of R_B that will put the transistor in saturation assuming β_{DC}=200 when V_{IN} = 5 V.



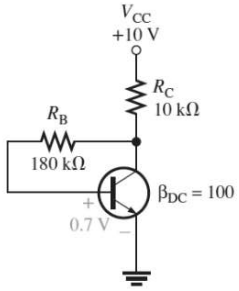
Problem 1: Determine V_{CE} and I_C in the shown voltage-divider biased transistor circuit if β_{DC} = 100, and $V_{CE(sat)}$=0.2 V. Is this transistor in saturation?



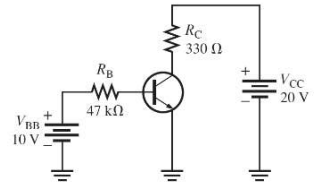
Problem 2: Determine the Q-point (I_C, V_{CE}) for the shown circuit if β_{DC}=200 and $V_{CE(sat)}$=0.2 V.



Problem 3: Find the Q-point values (I_C and V_{CE}) for the given circuit if β_{DC}=100 and $V_{CE(sat)}$=0.2 V.



Problem 1: Determine the Q-point for the circuit given below and draw the dc load line. Find the maximum peak value of base current and collector current to avoid distortion. Assume $V_{CE(sat)}$=0, and β_{DC} = 200



Problem 2: Determine the r_e' of a transistor that is operating with a dc emitter current of 1.62 mA.