

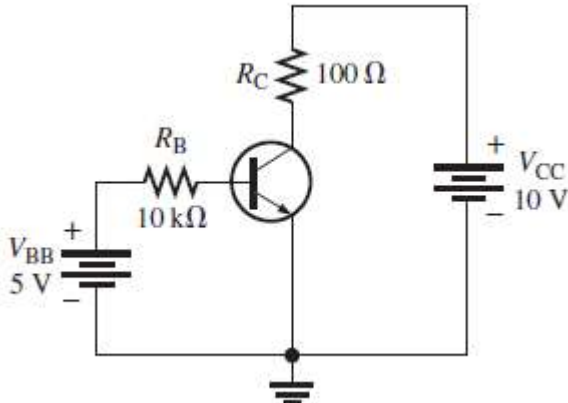
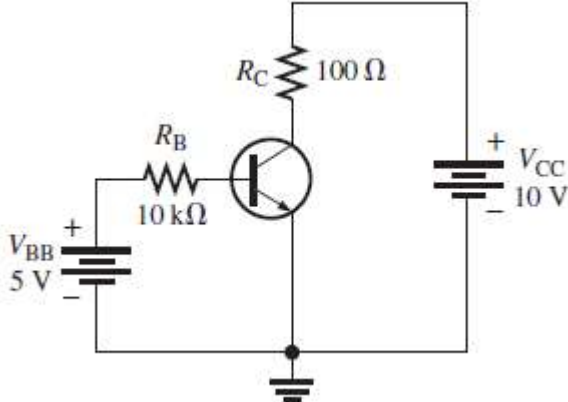
Electronic Circuits - Tutorial 05

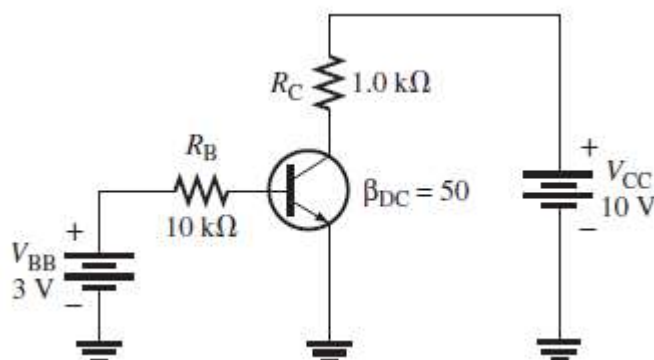
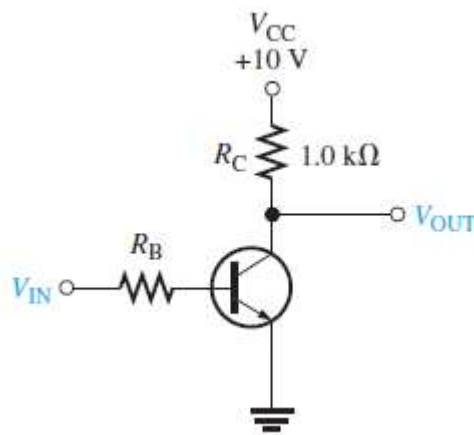
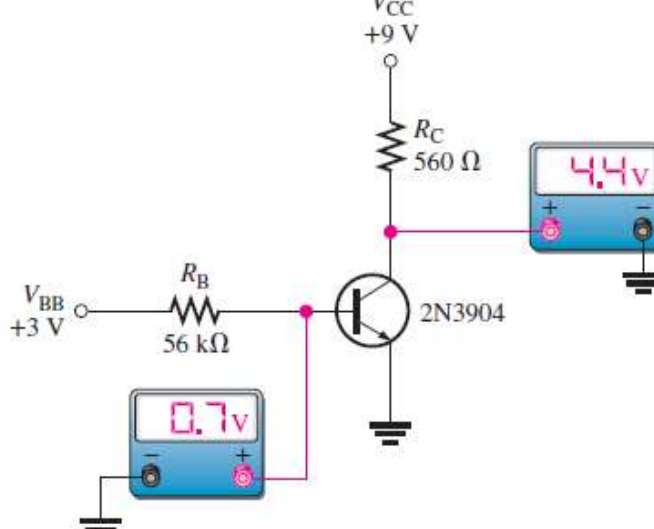
BJT Transistor

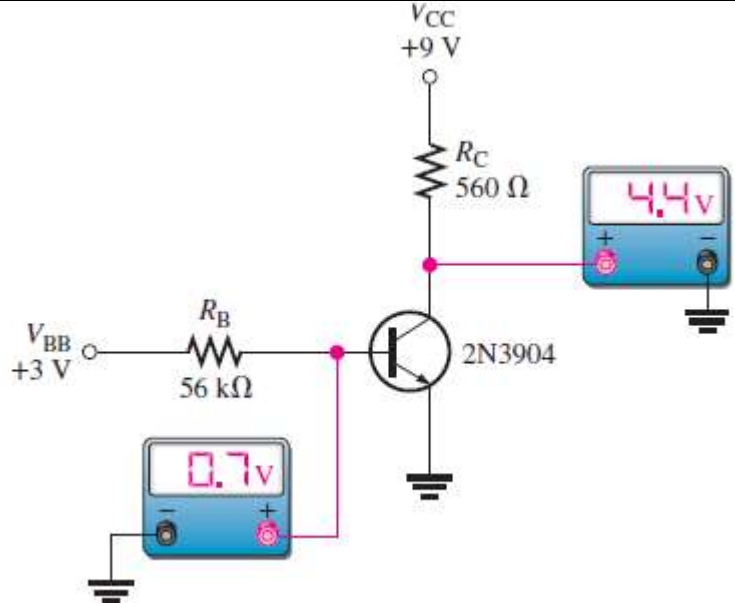
T & F

#	TRUE/FALSE QUIZ	
1	A bipolar junction transistor has three terminals.	T
2	For operation in the linear or active region, the base-emitter junction of a transistor is forward biased.	T
3	The base current and collector current are approximately equal.	F
4	cutoff and saturation are the two normal states of a linear transistor amplifier.	F
5	DC and hFE are two different transistor parameters.	F
6	Amplification is the output voltage divided by the input current.	F

MCQ1

#	MCQ 1	
1	 <p>If a transistor with a higher β_{DC} is used in Figure, the collector current will (a) increase (b) decrease (c) not change</p>	a
2	 <p>If a transistor with a higher β_{DC} is used in Figure, the base current will (a) increase (b) decrease (c) not change</p>	c

3	 <p>If V_{CC} in Figure is increased, the base current will (a) increase (b) decrease (c) not change</p>	c
4	 <p>If the transistor in Figure is saturated and the base current is increased, the collector current will (a) increase (b) decrease (c) not change</p>	c
5	 <p>If the transistor in Figure is open from collector to emitter, the voltage across R_C will (a) increase (b) decrease (c) not change</p>	b

6	 <p>If the base resistor in Figure is open, the transistor collector voltage will (a) increase (b) decrease (c) not change</p>	a
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MCQ 2

#	MCQ 2	
1	The three terminals of a bipolar junction transistor are called (a) p, n, p (b) n, p, n (c) input, output, ground (d) base, emitter, collector	d
2	For operation as an amplifier, the base of an <i>npn</i> transistor must be (a) positive with respect to the emitter (b) negative with respect to the emitter (c) positive with respect to the collector (d) 0 V	a
3	The β_{DC} of a transistor is its (a) current gain (b) voltage gain (c) power gain (d) internal resistance	a
4	The approximate voltage across the forward-biased base-emitter junction of a silicon BJT is (a) 0 V (b) 0.7 V (c) 0.3 V (d) V_{BB}	b
5	If the output of a transistor amplifier is 5 V rms and the input is 100 mV rms, the voltage gain is (a) 5 (b) 500 (c) 50 (d) 100	c
6	In a given transistor amplifier, $R_C = 2.2 \text{ k}\Omega$ and $r'_e = 20 \Omega$, the voltage gain is (a) 2.2 (b) 110 (c) 20 (d) 44	b
7	In cutoff, V_{CE} is (a) 0 V (b) minimum (c) maximum	f
8	To saturate a BJT, (a) $I_B = I_{C(sat)}$ (b) $I_B > I_{C(sat)}/\beta_{DC}$ (c) V_{CC} must be at least 10 V (d) the emitter must be grounded	b
9	In a phototransistor, base current is (a) set by a bias voltage (b) directly proportional to light intensity (c) inversely proportional to light intensity (d) not a factor	b
10	An optocoupler usually consists of (a) two LEDs (b) an LED and a photodiode (c) an LED and a phototransistor (d) both (b) and (c)	d

11	A DMM measuring on open transistor junction shows (a) 0 V (b) 0.7 V (c) OL (d) V_{cc}	c
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