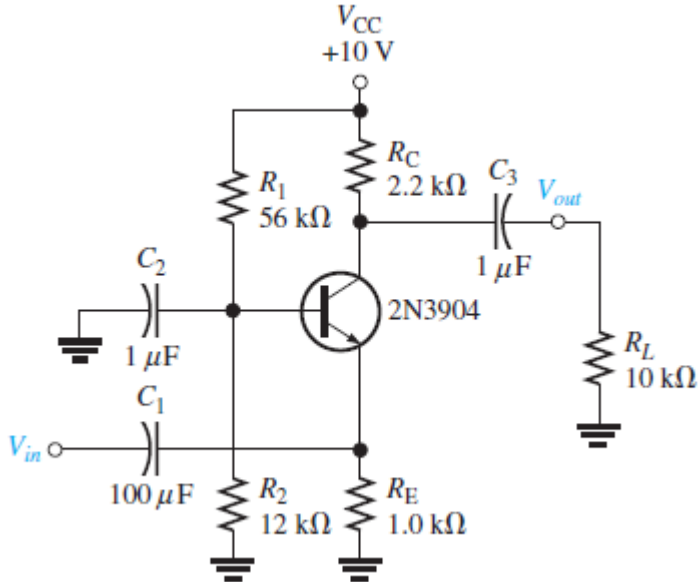
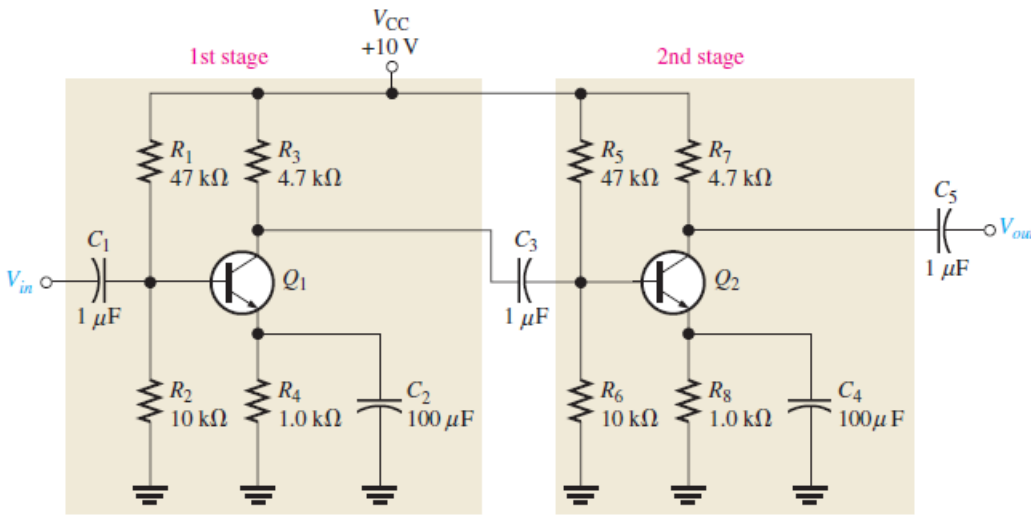


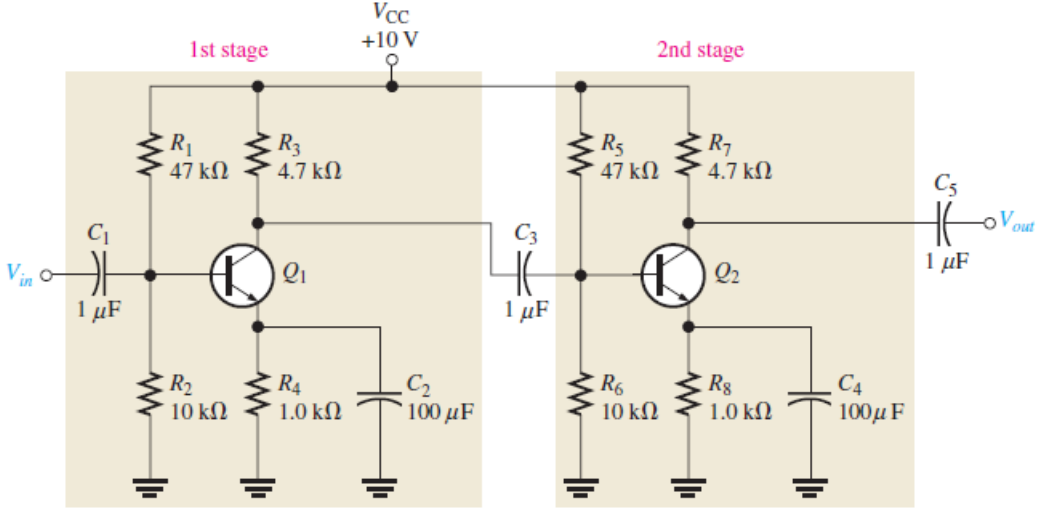
Electronic Circuits II - Tutorial 07

BJT Amplifiers 3

#		
1	A CB amplifier has high current gain.	F
2	The overall voltage gain of a multistage amplifier is the product of the gains of each stage.	T
3	A differential amplifier amplifies the difference of two input signals.	T
4	CMRR is the common-mode resistance ratio.	F

#	Question	Answer
1	 <p>If the value of R_C in Figure is increased, the current gain will</p> <p>(a) increase (b) decrease (c) not change</p>	c
2	 <p>$\beta_{DC} = \beta_{ac} = 150$ for Q_1 and Q_2</p> <p>If C_2 and C_4 in Figure are increased in value, V_{out} will</p> <p>(a) increase (b) decrease (c) not change</p>	c



3	 <p style="text-align: center;">$\beta_{DC} = \beta_{ac} = 150$ for Q_1 and Q_2</p> <p>If the value of R4 in Figure is reduced, the overall voltage gain will (a) increase (b) decrease (c) not change</p>	C
4	<p>The input resistance of a common-base amplifier is (a) very low (b) very high (c) the same as a CE (d) the same as a CC</p>	a
5	<p>Each stage of a four-stage amplifier has a voltage gain of 15. The overall voltage gain is (a) 60 (b) 15 (c) 50,625 (d) 3078</p>	c
6	<p>The overall gain found in Question 14 can be expressed in decibels as (a) 94.1 dB (b) 47.0 dB (c) 35.6 dB (d) 69.8 dB</p>	a
7	<p>A differential amplifier (a) is used in op-amps (b) has one input and one output (c) has two outputs (d) answers (a) and (c)</p>	d
8	<p>When a differential amplifier is operated single-ended, (a) the output is grounded (b) one input is grounded and a signal is applied to the other (c) both inputs are connected together (d) the output is not inverted</p>	b
9	<p>In the double-ended differential mode, (a) opposite polarity signals are applied to the inputs (b) the gain is 1 (c) the outputs are different amplitudes (d) only one supply voltage is used</p>	a



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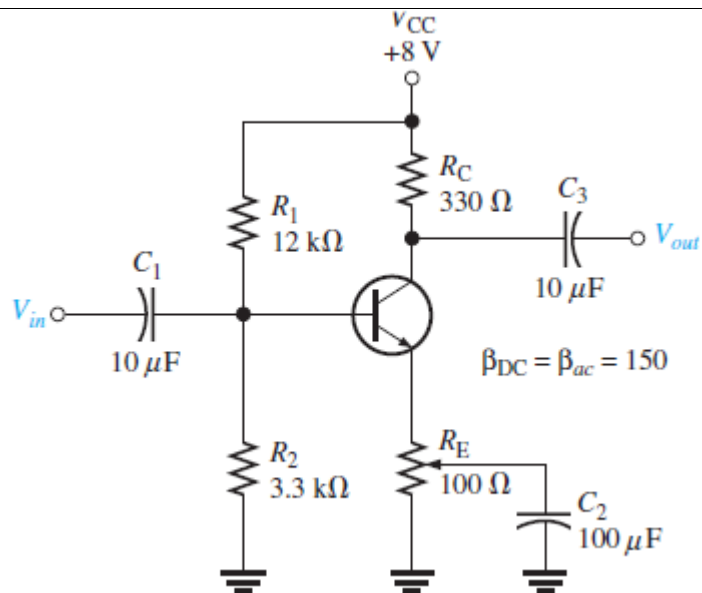
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10	In the common mode, (a) both inputs are grounded (b) the outputs are connected together (c) an identical signal appears on both inputs (d) the output signals are in-phase	c
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Q
1



Find the overall maximum voltage gain for the amplifier in Figure with a $1.0\text{ k}\Omega$ load if it is being driven by a $300\text{ k}\Omega$ source.

Sol
1

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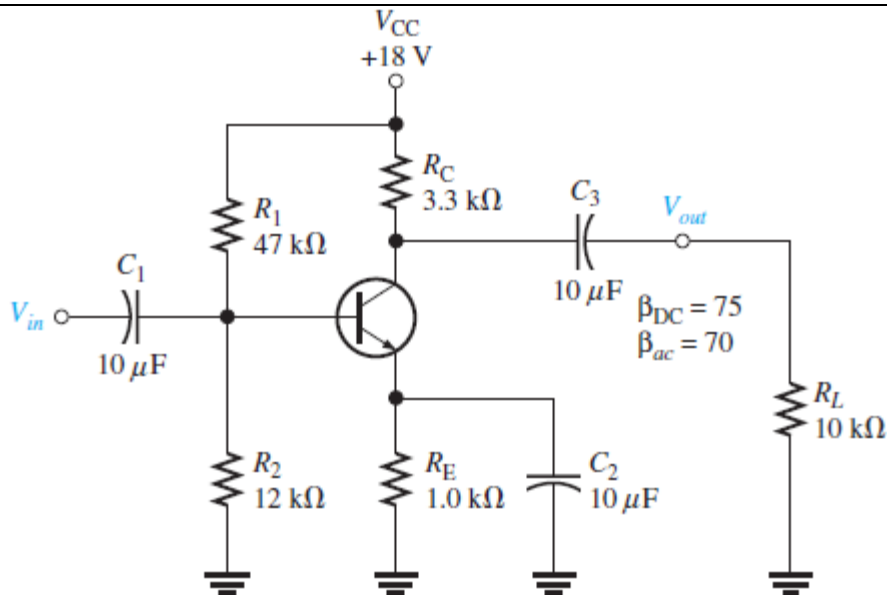
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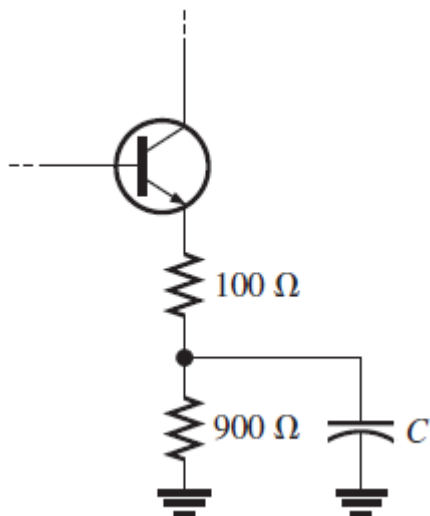
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Q
2



Modify the schematic to show how you would “swamp out” the temperature effects of r'_e in Figure by making R_e at least ten times larger than r'_e . Keep the same total R_E . How does this affect the voltage gain?

Sol
2





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