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Unit 8 - Week 7

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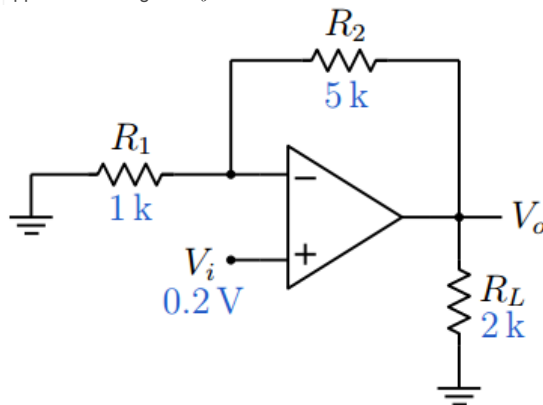
Assignment-7

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2018-03-14, 23:59 IST

1) In the circuit shown in the figure, the resistors have a tolerance of $\pm 1\%$. If the op-amp is ideal, what is the approximate range of V_o ?

1 point



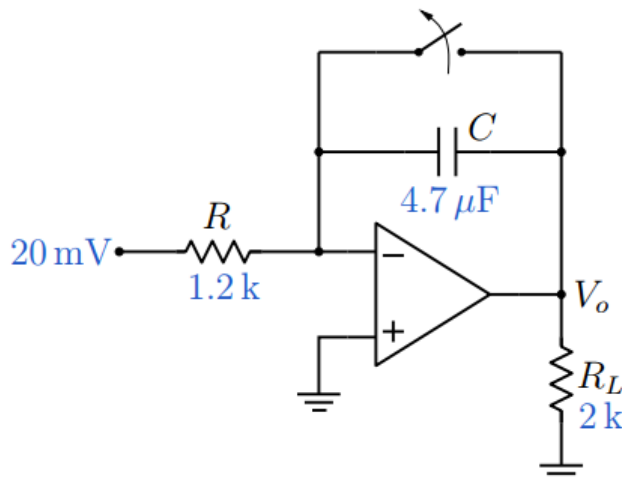
- 1.1 V to 1.3 V
- 1.15 V to 1.25 V
- 1.18 V to 1.22 V
- 1.19 V to 1.21 V

No, the answer is incorrect. Score: 0

Accepted Answers: 1.18 V to 1.22 V

2) In the circuit shown in the figure, the op-amp saturation voltage is $\pm V_{sat} = \pm 12 V$. If the switch is opened at $t = 0$, at what time will the op-amp reach saturation?

1 point

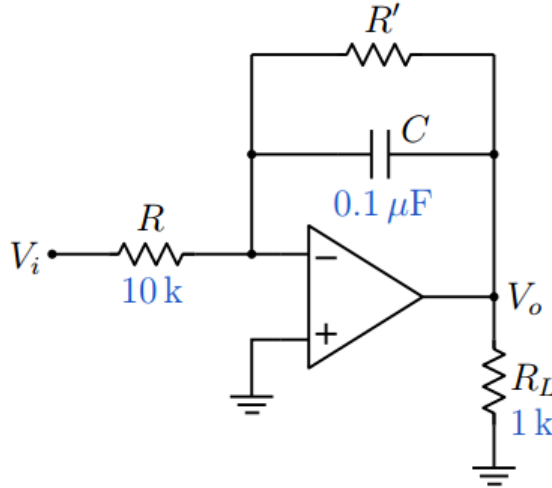


- 3.4 sec
- 0.58 sec
- 63 msec
- 9.2 msec

No, the answer is incorrect.
Score: 0

Accepted Answers:
3.4 sec

3) In the integrator circuit shown in the figure, we want to ensure that the impedance presented by the capacitor at a frequency of 5 kHz is smaller than R' by a factor of at least 50. What is R'_{min} ?

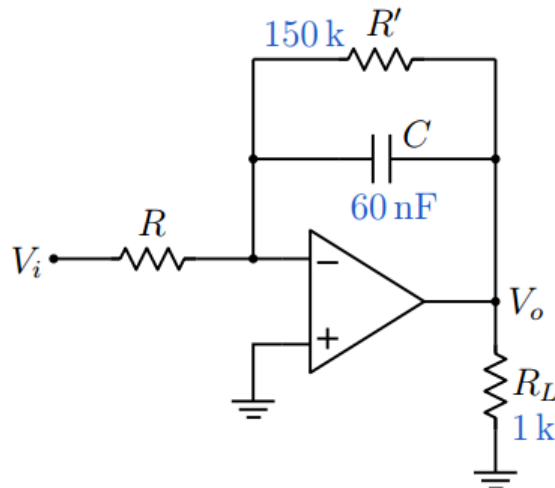


- 2.5 kΩ
- 106 kΩ
- 68 kΩ
- 15.9 kΩ

No, the answer is incorrect.
Score: 0

Accepted Answers:
15.9 kΩ

4) In the integrator circuit shown in the figure, the input is a 5 V peak-to-peak, 2 kHz square wave. What value of R is required for the output voltage to be 2 V peak-to-peak?

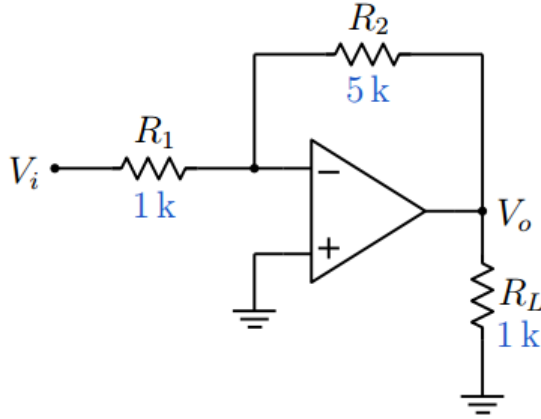


- 5.2 kΩ
- 20.8 kΩ
- 7.1 kΩ
- 12.8 kΩ

No, the answer is incorrect.
Score: 0

Accepted Answers:
5.2 kΩ

5) In the circuit shown in the figure, the op-amp offset voltage is in the range $-1\text{ mV} < V_{OS} < +1\text{ mV}$. If the op-amp is otherwise ideal, what is the range of the output voltage with $V_i = 20\text{ mV}$?

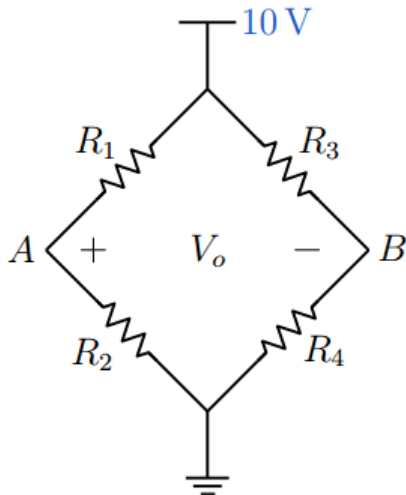


- 112 mV to -88 mV
- 106 mV to -94 mV
- 110 mV to -90 mV
- 102 mV to -98 mV

No, the answer is incorrect.
Score: 0

Accepted Answers:
-106 mV to -94 mV

6) In the bridge circuit shown in the figure, $R_1 = R_2 = R_3 = R$, and R_4 lies in the range $0.92 R < R_4 < 1.08 R$. What is the common-mode voltage V_{oc} ?



- 5 V
-



- 2.5 V
- 7.5 V
- 0 V

No, the answer is incorrect.
Score: 0

Accepted Answers:
5 V

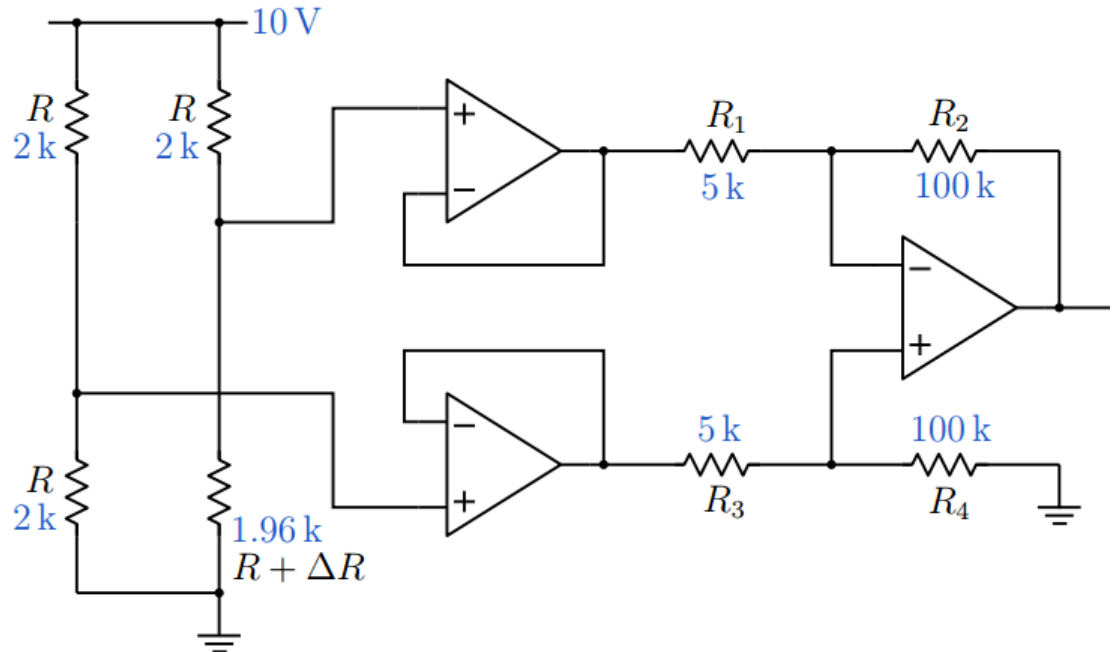
7) In the circuit of Q – 6, the maximum value of $|V_{od}|$ is approximately

- 0.1 V
- 0.4 V
- 0.2 V
- 0.15 V

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.2 V

8) In the circuit shown in the figure, let V_{id} be the differential-mode input voltage for the difference amplifier, V_{ic} be the common-mode input voltage, V_{od} be the differential-mode output voltage, and V_{oc} be the common-mode output voltage. The nominal values of R_1, R_2, R_3, R_4 are shown in the figure. $|V_{id}|$ is approximately



- 12.5 mV
- 25 mV
- 37.5 mV
- 50 mV

No, the answer is incorrect.
Score: 0

Accepted Answers:
50 mV

9) In the circuit of Q – 8, suppose R_1, R_2, R_3, R_4 are equal to their nominal values. V_{od} is approximately

- 1 V
- 0.5 V

1 point

- 2 V
- 1.25 V

No, the answer is incorrect.

Score: 0

Accepted Answers:

1 V

10) In the circuit of $Q - 8$, suppose $R_1 = 5 \text{ k}\Omega$, $R_2 = R_4 = 100 \text{ k}\Omega$, but R_3 is slightly different than its nominal value, viz., $R_3 = 5.04 \text{ k}\Omega$. $|V_{oc}|$ is approximately

- 50 mV
- 38 mV
- 68 mV
- 92 mV

No, the answer is incorrect.

Score: 0

Accepted Answers:

38 mV

11) For the conditions given in $Q - 10$, the $CMRR$ of the difference amplifier is approximately

- 3,750
- 1,500
- 2,630
- 1,800

No, the answer is incorrect.

Score: 0

Accepted Answers:

2,630

12) In the circuit of $Q - 8$, suppose each of the resistances R_1 , R_2 , R_3 , R_4 , has a tolerance of 1%. What is the approximate worst-case value of $|V_{oc}|$?

- 20 mV
- 50 mV
- 95 mV
- 190 mV

No, the answer is incorrect.

Score: 0

Accepted Answers:

190 mV

13) For the conditions of $Q - 12$, what is the approximate worst-case $CMRR$ of the difference amplifier?

- 525
- 1,550
- 1,750
- 2,250

No, the answer is incorrect.

Score: 0

Accepted Answers:

525

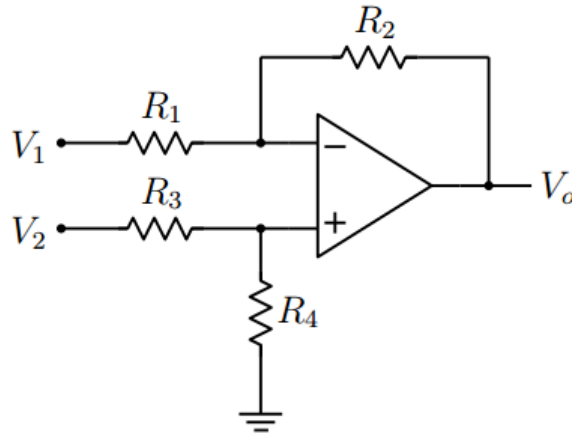
14) In the difference amplifier shown in the figure, $R_1 = R_3 = 10 \text{ k}\Omega$, $R_2 = 100 \text{ k}\Omega$. The resistance R_4 , which should be equal to R_2 , is slightly different, viz., $100.8 \text{ k}\Omega$. What is the approximate value of common-mode gain of the



1 point



circuit ?



- 5.6×10^{-3}
- 1.5×10^{-2}
- 7.3×10^{-3}
- 4.5×10^{-2}

No, the answer is incorrect.

Score: 0

Accepted Answers:

7.3×10^{-3}

15) For the difference amplifier of $Q = 14$, what is the approximate value of $CMRR$?

1 point

- 2,600
- 1,380
- 980
- 1,750

No, the answer is incorrect.

Score: 0

Accepted Answers:

1,380

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