Assignment 6

The due date for submitting this assignment has passed. **Due on 2018-03-07, 23:59 IST**

As per our records you have not submitted this assignment.

1) If the emitter resistance $R_E$ in the common-emitter amplifier is partially bypassed,
   - the input resistance decreases.
   - the voltage gain increases.
   - a larger input voltage can be applied without causing distortion in the output waveform.
   - the DC (bias) value of $I_C$ increases.

   **No, the answer is incorrect.**

   **Score:** 0

   **Accepted Answers:**
   - a larger input voltage can be applied without causing distortion in the output waveform.

2) What is $V_0$ in the following circuit?

   ![Circuit Diagram]

   - 0.5V
   - −0.5V
   - −1V
   - 1V

   **No, the answer is incorrect.**

   **Score:** 0

   **Accepted Answers:**
   - 0.5V
   - −0.5V
   - −1V
   - 1V
3) In the circuit of Q-2, what is $I_R$?

No, the answer is incorrect.
Score: 0
Accepted Answers:
-1mA

4) In the circuit shown in the figure with $V_i = 2V$, what is $V_o$?

No, the answer is incorrect.
Score: 0
Accepted Answers:
-0.1V
In the circuit shown in the figure, what is $V_o$ for $V_1 = 0.1V$?

- 0.4V
- 0.3V
- 0.6V
- 0.2V

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
0.3V

6) The figure shows a comparator with inputs $V_1$ and $V_2$, and output $V_o$ where $V_2 = 2V$ (DC), and $V_1$ is a triangular signal with a frequency of 1 kHz and peak-to-peak voltage of 10 V. What is the duty cycle of the output voltage?

- 0.6
- 0.33
- 0.45
- 0.7

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
0.7

7) The figure shows a comparator with inputs $V_1$ and $V_2$, and output $V_o$ where $V_2 = 2V$ (DC), and $V_1$ is a sinusoidal signal with a frequency of 1 kHz and peak-to-peak voltage of 10 V. What is the duty cycle of the output voltage?

- 0.63
- 0.45
- 0.72
- 0.28

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
0.63

8)
In the circuit shown in the figure $V_1 = 0.1V$ and $V_2 = 0.2V$. What is $V_o$?

- 0.6V
- -1.2V
- 0.9V
- -0.3V

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.9V

9) In the op-amp circuit of Q-8, let $V_1 = 0.2\sin\omega t$ Volts and $V_2 = 0.1\sin\omega t$ Volts. What is $V_o$ (in Volts)?

- $0.6\sin\omega t$
- $-1.2\sin\omega t$
- $0.9\sin\omega t$
- $-1.8\sin\omega t$

No, the answer is incorrect.
Score: 0
Accepted Answers:
10) In the op-amp circuit shown in the figure, the output voltage is given by $V_o = k_1 V_1 + k_2 V_2$. What are the values of $k_1$ and $k_2$?

\[ V_o = -1.8 \sin(\omega t) \]

- $k_1 = -3, k_2 = 5$
- $k_1 = -2, k_2 = 7$
- $k_1 = 2, k_2 = 2$
- $k_1 = 3, k_2 = 5$

No, the answer is incorrect.

Score: 0

Accepted Answers:
- $k_1 = -2, k_2 = 7$

11) In the op-amp circuit shown in the figure, what input voltage $V_i$ should be applied to get a current $I_L = 50 \mu A$ through $R_L$?

- 0.5V
- 0.6V
12 In the circuit of Q-11, $R_1$ is changed (i.e., both resistances marked as $R_1$) from 2kΩ to 4kΩ. What input voltage $V_i$ should be applied to get a current $I_L = 50μA$ through $R_L$?

- 0.25V
- 0.5V
- 0.25V
- 0.5V
- 1V

No, the answer is incorrect. Score: 0

Accepted Answers:
-0.25V

13 In the circuit shown in the figure, $V_1 = 0.1V$, $V_2 = 0.2sinωt$, and $V_3 = -0.3V$. Which of the following options correctly describes the output waveform $V_o(t)$?

-0.5V
-0.25V
-0.25V
-0.5V
-1V

No, the answer is incorrect. Score: 0

Accepted Answers:
-0.25V
No, the answer is incorrect.
Score: 0
Accepted Answers:

\[ V_o(t) = -0.4\sin\omega t \]

In the inverting amplifier shown in the figure, the op-amp is ideal except that it has a finite gain \( A_V = 100 \). For an input voltage \( V_i = 0.1V \), what is \( V_o \)?

\[ V_o(t) = 0.1\sin\omega t + 0.3 \]

\[ V_o(t) = -0.4\sin\omega t + 0.2 \]

\[ V_o(t) = 0.1\sin\omega t - 0.2 \]

\[ V_o(t) = -0.1\sin\omega t - 0.2 \]

-0.95V
-1V
-0.9V
-0.85V

No, the answer is incorrect.
Score: 0
Accepted Answers:

\[ -0.9V \]