Week 12 Assignment 12

The due date for submitting this assignment has passed. Due on 2018-04-18, 23:59 IST.

Submitted assignment

1) The given op-amp circuit has a cut-off frequency of 12 kHz, determine the value of R2. 1 point

- 1.32 kΩ
- 3.18 kΩ
- None of the mentioned
- 4.16 kΩ

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

2) A MC1536 op-amp has a gain bandwidth product of 5 MHz. A non-inverting amplifier implemented using this IC is having a voltage gain of 40 dB which will exhibit a -3 dB bandwidth of? 1 point

- 12.5 MHz
- 25 kHz
- 50 kHz
- 200 Hz

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

3) A LM741 amplifier has its FL and FH frequencies at 500 Hz and 200 kHz respectively and an open-loop gain of 100. A feedback network with feedback factor (β) of 0.89 is connected to the amplifier. Find the new lower and upper cut off frequencies.

Note: FLf and FHf are lower and upper cut-off frequencies with feedback 1 point

- FLf = 100 Hz, FHf = 20 kHz
- FLf = 5.5 Hz, FHf = 18 MHz
- FLf = 5 Hz, FHf = 20 MHz
- FLf = 10.9 Hz, FHf = 8.9 kHz

No, the answer is incorrect.
Score: 0
Accepted Answers:
4) When a second order high pass filter and second order low pass sections are cascaded, the resultant filter is a

- 20 dB/decade band-reject filter
- 60 dB/decade low-pass filter
- 40 dB/decade band-pass filter
- 80 dB/decade high-pass filter

No, the answer is incorrect.

Score: 0

Accepted Answers:
40 dB/decade band-pass filter

5) Which among the following circuits given is a low pass filter with pass band gain of 2

No, the answer is incorrect.

Score: 0

Accepted Answers:
6) Assume the given filter circuit uses an ideal op-amp. Find the type of filter and its transfer function T(s).

- High Pass Filter, \( T(s) = \frac{sR_1L_1}{R_1 + sL_1} \)
- Low Pass Filter, \( T(s) = \frac{sR_1}{R_1 - sL_1} \)
- Band Pass Filter, \( T(s) = \frac{R_1}{R_1 + sL_1} \)
- Band Stop Filter, \( T(s) = \frac{R_1L_1}{R_1 + 2sL_1} \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
High Pass Filter, \( T(s) = \frac{sR_1L_1}{R_1 + sL_1} \)

7) The given circuit has a unity-gain bandwidth 12 kHz. What will be the bandwidth of the circuit?

- 0
- 24 kHz
- 12 kHz
- 6 kHz

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

8) Refer to the given circuit. Determine the type of filter and its cut-off frequency \( f_c \).

- Low pass, \( f_c = 2.9 \) Hz
- Band pass, \( f_c = 12 \) kHz
- High pass, \( f_c = 15.9 \) Hz
- Band reject, \( f_c = 20 \) kHz

No, the answer is incorrect.
Score: 0
Accepted Answers:
High pass, \( f_c = 15.9 \) Hz

9) Determine the roll-off for the filter circuit given.

- 20 dB/decade
- 80 dB/decade
- 40 dB/decade
- 60 dB/decade

No, the answer is incorrect.
Score: 0
10) Which filter does not pass all frequencies within a band between a lower and an upper critical frequency and passes all others outside this band.

- Low pass
- Band pass
- Band reject
- High pass

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

11) Match the frequency response curve with respective filter type

1. High pass
2. Band pass
3. Low pass
4. Band reject

1-b, 2-a, 3-c, 4-d

No, the answer is incorrect.
Score: 0
Accepted Answers: 1-b, 2-a, 3-c, 4-d

12) Consider the circuit shown below. If the has an input offset current Ios of 1 µA, compute the output voltage under steady state condition, if the input Vi is 1 Vp-p of 1 kHz square wave signal.

- A triangular wave of 1 Vp-p
- Negative supply voltage – Vcc
- Positive supply voltage + Vcc
- A square wave of 1 Vp-p
Consider a unity gain buffer amplifier with a bandwidth of 200 kHz. Compute the output voltage of the op-amp if the input is of 5 V sinusoidal of frequency 200 kHz.

- 5/\sqrt{2} V
- 5 V
- 5/2 V
- 0 V

No, the answer is incorrect. Score: 0
Accepted Answers: 5/\sqrt{2} V

Consider the circuit shown below. If the capacitor C is initially uncharged and at t = 0 the switch is closed, compute the voltage across the capacitor at t = 1 ms.
Note: Consider the op-amp is supplied with ± 15 V.

- 10 V
- 6.3 V
- -15 V
- 15 V

No, the answer is incorrect. Score: 0
Accepted Answers: 10 V

Choose the correct option for the following circuit.

- An All-pass filter
- A Band-pass filter
- A High-pass filter
- A Low-pass filter

No, the answer is incorrect. Score: 0
Accepted Answers: An All-pass filter