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Courses » **Electronic Modules for Industrial Applications using Op-Amps**

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Unit 2 - Introduction to Op-Amps

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Course outline

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Introduction to Op-Amps

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○ Introduction to Op-amp

○ Introduction Wafer Manufacturing Process and Clean room Protocols

○ Introduction to Fabrication Process Technology and Op-amp

○ Op-amp Characteristics and Datasheet Parameters

○ Overview of Active Filters and Oscillators

○ Overview of Op-amp Oscillators

Week 0 Assignment

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.   **Due on 2019-02-25, 23:59 IST.**

1) In any series RLC circuit   *1 point*

   ○ Increasing the frequency decreases the resistance

   ○ Impedance will always decrease

   ○ None of the above

   ○ Both XL and XC changes as frequency changes

   No, the answer is incorrect.
   Score: 0

   Accepted Answers:
   Both XL and XC changes as frequency changes

2) Calculate the current I through 25 Ω resistor if input I1 of 10 mA is   *1 point*
   applied using a current source

   ○ 6mA

   ○ 8 mA

   ○ 10 mA

   ○ 2 mA

   No, the answer is incorrect.
   Score: 0

   Accepted Answers:
   6mA

3) Find the equivalent resistance Req in ohms for the circuit given   *1 point*

   ○ ○5○

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Accepted Answers:
250

4) Voltmeters are always connected in _____ with a circuit   *1 point*

- ○ Both Series and Parallel
- ○ Series
- ○ Parallel
- ○ Either Series or Parallel

No, the answer is incorrect.
Score: 0

Accepted Answers:
Parallel

5) Consider the circuit shown in figure below. Assume the diode is Ideal, calculate the voltage across the R1 resistor   *1 point*

- ○ 0 V
- ○ 3 V
- ○ 3.33 V
- ○ 1 V

No, the answer is incorrect.
Score: 0

Accepted Answers:
0 V

6) Which law is used to find the direction of statically induced EMF?   *1 point*

- ○ Kirchhoff's Law
- ○ Maxwell's Law
- ○ Lenz's Law
- ○ Ohm's Law

No, the answer is incorrect.
Score: 0

Accepted Answers:
Lenz's Law

7) Select the correct option with an op-amp having a gain of 50.   *1 point*
Note: Due to some design considerations, the resistors of the op-amp should not be smaller than 1 kΩ

- ○
- ○
- ○
- ○

No, the answer is incorrect.
Score: 0

Accepted Answers:

8) In continuation to the above question, what is the phase of the output   *1 point*

Interaction Session

○ Will have same phase

○ A Phase shift of 90º

○ A phase shift of 180º

○ None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
A phase shift of 180º

9) Consider the silicon transistor shown in the figure below has $\beta = 80$, then compute the VCE of the transistor   *1 point*

○ – 6.08 V

○ 0.2 V

○ 1.2 V

○ 6.08 V

No, the answer is incorrect.
Score: 0

Accepted Answers:
– 6.08 V

10) If the length of the conductor is tripled and cross-sectional area is reduced to 50% then its resistance will be   *1 point*

○ Increase by 1.5 times

○ Decrease by 1.5 times

○ Increase by 6 times

○ Decrease by 6 times

No, the answer is incorrect.
Score: 0

Accepted Answers:
Increase by 6 times

11) What is the conductance of a circuit having five 1000 ohm resistors in parallel?   *1 point*

○ 0.005 S

○ 0.05 S

○ 5 S

○ 0.5 S

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.005 S

12) An inverting op-amp has an open-loop voltage gain and closed-loop   *1 point*
voltage gain of 100,000 and 30 respectively. If an op-amp with an open-loop voltage gain of 300,000 is substituted in the arrangement, the closed-loop gain ....

○ Drops to 15

○ Doubles

    ○ Increases by 15 %

    ○ Remains at 30

No, the answer is incorrect.
Score: 0

Accepted Answers:
Remains at 30

13) Which of the following elements serves as a protection against overload?   **1 poi...**

    ○ Fuse

    ○ Switches

    ○ Diode

    ○ Relay

No, the answer is incorrect.
Score: 0

Accepted Answers:
Fuse

14) Two capacitors having capacitance of 5 uF and 10 uF series will have a total capacitance of _____ uF   **1 point**

    ○ 33

    ○ 3.3

    ○ 66

    ○ 6.6

No, the answer is incorrect.
Score: 0

Accepted Answers:
3.3

15) A differential amplifier shown below has a differential gain of 100 and a CMRR of 40 dB. If V1 = 0.6 V and V2 = 0.4 V calculate the output voltage   **1 point**

    ○ 20.5 V

    ○ 20 V

    ○ 10.25 V

    ○ 15 V

No, the answer is incorrect.
Score: 0

Accepted Answers:
20.5 V

16) The gain of a second order low pass filter _____   **1 point**

    ○ Decreases at the rate 20 dB/Decade

    ○ Decreases at the rate of 40 dB/Decade

    ○ Increases at the rate of 40 dB/Decade

    ○ Increases at the rate 20 dB/Decade

No, the answer is incorrect.
Score: 0

Accepted Answers:
Decreases at the rate of 40 dB/Decade

17) Consider a differential amplifier circuit as shown in the figure,   **1 point**
where the input voltage is given to the V1 terminal and V2 terminal is open
circuit. Then the gain of this circuit will be similar to which of the following

   ○ Both inverting and non-inverting amplifier

   ○ The non-inverting amplifier

   ○ The inverting amplifier

   ○ None of the mentioned

No, the answer is incorrect.
Score: 0

Accepted Answers:
The inverting amplifier

18) An ideal op-amp has _____   **1 point**

   ○ Infinite input resistance

   ○ Infinite differential voltage gain

   ○ Zero output resistance

   ○ All the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
All the above

19) An amplifier having the following parameters: **1 point**
i.   Open-loop gain $|A| = 1000$
ii.   Negative Feedback $\beta = 1/100$
If upper cut-off frequency without feedback is at 100 kHz, then with
feedback it would be

   ○ 500k Hz

   ○ 1000k Hz

   ○ 1.5k Hz

   ○ 1100 kHz

No, the answer is incorrect.
Score: 0

Accepted Answers:
1100 kHz

20) What is the max output voltage that can be observed on the   **1 point**
practical op-amp, if an op-amp is supplied with a voltage of ± 15 V?

   ○ < 15 V

   ○ > 15 V

   ○ Does not depend on the supply voltage

   ○ None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
< 15 V

21) What rating of a resistor determines its ability to absorb heat?   *1 point*

○ Wattage

○ Voltage

○ Ohmic

○ Current

No, the answer is incorrect.
Score: 0

Accepted Answers:
Wattage

22) The output of an NAND gate with three input A, B and C is high   *1 point*
when_____
i.   A = 0, B = 0, C = 1
ii.   A = 1, B = 1, C = 0
iii.   A = 0, B = 1, C = 1
iv.   A = 1, B = 0, C = 1

○ i, ii, iii

○ ii, iii, iv

○ i, iii, iv

○ i, ii, iii & iv

No, the answer is incorrect.
Score: 0

Accepted Answers:
i, ii, iii & iv

23) When will the potential difference between the input terminals of an *1 point*
op-amp is treated nearly to zero?

○ If the two supply voltages are balanced

○ If the output voltage is not saturated

○ If the op-amp is used in a circuit having negative feedback

○ If there is a DC bias path between each of the terminals and the
circuit ground

No, the answer is incorrect.
Score: 0

Accepted Answers:
If the op-amp is used in a circuit having negative feedback

24) Calculate the voltage across R3 for the given circuit   *1 point*

○ -300 V

○ 160 V

○ 300 V

○ -160 V

No, the answer is incorrect.
Score: 0

Accepted Answers:
160 V

25)Find out the input power supply for the given circuit   *1 point*

○ -50 V

○ 200 V

○ 150 V

○ 100 V

No, the answer is incorrect.
Score: 0

Accepted Answers:
200 V

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