Unit 2 - Introduction to Op-Amps

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
   - Increasing the frequency decreases the resistance 1 point
   - 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 applied using a current source
   - 6 mA
   - 8 mA
   - 10 mA
   - 2 mA

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

3) Find the equivalent resistance Req in ohms for the circuit given
   - 250
   - 50
   - 100
   - 150

   No, the answer is incorrect.
   Score: 0
4) Voltmeters are always connected in ________ with a circuit
   - Both Series and Parallel
   - Series
   - Parallel
   - Either Series or Parallel

   No, the answer is incorrect.
   Score: 0

5) Consider the circuit shown in figure below. Assume the diode is ideal, calculate the voltage across the R1 resistor
   - 0 V
   - 3 V
   - 3.33 V
   - 1 V

   No, the answer is incorrect.
   Score: 0

6) Which law is used to find the direction of statically induced EMF?
   - Kirchhoff's Law
   - Maxwell's Law
   - Lenz's Law
   - Ohm's Law

   No, the answer is incorrect.
   Score: 0

7) Select the correct option with an op-amp having a gain of 50.
   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

8) In continuation to the above question, what is the phase of the output
9) Consider the silicon transistor shown in the figure below has $\beta = 80$, then compute the VCE of the transistor.

- 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

- 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?

- 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 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
13. Which of the following elements serves as a protection against overload?

- Fuse
- Switches
- Diode
- Relay

No, the answer is incorrect.
Score: 0
Accepted Answers: Remains at 30

14. Two capacitors having capacitance of 5 uF and 10 uF series will have a total capacitance of _____ uF

- 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 \( V_1 = 0.6 \) V and \( V_2 = 0.4 \) V calculate the output voltage

- 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 __________

- Decreases at the rate 20 dB/Decade
- Decreases at the rate 40 dB/Decade
- Increases at the rate 40 dB/Decade
- Increases at the rate 20 dB/Decade
17) Consider a differential amplifier circuit as shown in the figure, 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:
Decreases at the rate of 40 dB/Decade

18) An ideal op-amp has ______

- Infinite input resistance
- Infinite differential voltage gain
- Zero output resistance
- All the above

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

19) An amplifier having the following parameters:
   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 practical op-amp, if an op-amp is supplied with a voltage of $\pm$ 15 V?

- $< 15$ V
- $> 15$ V
- Does not depend on the supply voltage
- None of the above

No, the answer is incorrect.
Score: 0
21. What rating of a resistor determines its ability to absorb heat? 
   - Wattage
   - Voltage
   - Ohmic
   - Current

   No, the answer is incorrect.

   Accepted Answers:
   Wattage

22. The output of an NAND gate with three inputs A, B, and C is high 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

   No, the answer is incorrect.

   Accepted Answers:
   i, ii, iii & iv

23. When will the potential difference between the input terminals of an 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.

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

24. Calculate the voltage across R3 for the given circuit
   - -300 V
   - 160 V
   - 300 V
   - -160 V

   No, the answer is incorrect.

   Accepted Answers:
   160 V
Find out the input power supply for the given circuit

-50 V
200 V
150 V
100 V

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