

Viva Questions:

1. What is an operational amplifier?

An operational amplifier, abbreviated as op-amp, is basically a multi-stage, very high gain, direct-coupled, negative feedback amplifier that uses voltage shunt feedback to provide a stabilized voltage gain.

2. What is the output Differentiator and Integrator?

If we give the sinusoidal input in differentiator we will get the output of differentiator as a square output. If we give the sinusoidal input in integrator we will get the output of integrator as a ramp output.

3. What is inside an operational amplifier?

Operations amplifiers — op-amps for short, are integrated circuits, constructed mostly out of transistors and resistors. These integrated circuits multiply an input signal to a larger output.

You can use these components with voltage and current in both DC and AC circuits.

4. What is operational amplifier and its types?

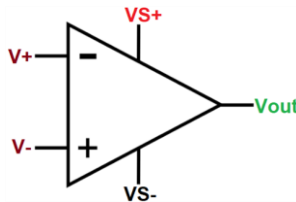
An operational amplifier (op amp) is an analog circuit block that takes a differential voltage input and produces a single-ended voltage output. Op amps usually have three terminals: two high-impedance inputs and a low-impedance output port.

5. What is the principle of amplifier?

The power amplifier works on the basic principle of converting the DC power drawn from the power supply into an AC voltage signal delivered to the load. Although the amplification is high the efficiency of the conversion from the DC power supply input to the AC voltage signal output is usually poor.

6. What is the symbol of operational amplifier?

An Operational Amplifiers gain is commonly known as the Open Loop Differential Gain, and is given the symbol



7. How op amp can be used as inverting amplifier?

In this Inverting Amplifier circuit the operational amplifier is connected with feedback to produce a closed loop operation. ... This is because the junction of the input and feedback signal (X) is at the same potential as the positive (+) input which is at zero volts or ground then, the junction is a “Virtual Earth”.

8. What is gain of inverting amplifier?

The voltage gain, A_v , is actually the output voltage (V_{out}) divided by the input voltage (V_{in}), i.e. it is the number of times the output voltage is larger than the input voltage. It is also easy to determine the equation for the voltage gain.

9. Why is it called an inverting amplifier?

It is called Inverting Amplifier because the op-amp changes the phase angle of the output signal exactly 180 degrees out of phase with respect to input signal. Same as like before, we use two external resistors to create feedback circuit and make a closed loop circuit across the amplifier.

10. How does an inverting amplifier work?

In an inverting amplifier circuit, the operational amplifier inverting input receives feedback from the output of the amplifier. Assuming the op-amp is ideal and applying the concept of virtual short at the input terminals of op-amp, the voltage at the inverting terminal is equal to non-inverting terminal.

11. Why feedback is used in op amp?

The ideal op-amp has infinite gain, and this is of little use in analog electronics. The feedback is used to limit the gain of the circuit. ... This will set the gain of the amplifier to X. In the case of real op-amps, A won't be infinite, but big enough to allow cancelling it in the DC gain equation.

12. What do you mean by non-inverting amplifier?

A non-inverting amplifier is an op-amp circuit configuration which produces an amplified output signal. ... The high input impedance and low output impedance of the non-inverting amplifier makes the circuit ideal for impedance buffering applications.

13. What is the difference between inverting and non-inverting input?

What is the inverting & non-inverting amplifier? The amplifier which has 180 degrees out of phase output with respect to input is known as an inverted amplifier, whereas the amplifier which has the o/p in phase with respect to i/p is known as a non-inverting amplifier.

14. Why Positive feedback is not used in op amp?

In an op-amp circuit with no feedback, there is no corrective mechanism, and the output voltage will saturate with the tiniest amount of differential voltage applied between the inputs.

15. What is voltage gain?

The difference between the output signal voltage level in decibels and the input signal voltage level in decibels; this value is equal to 20 times the common logarithm of the ratio of the output voltage to the input voltage.

16. Which amplifier is called voltage follower why?

If the voltage is transferred unchanged (the voltage gain A_v is 1), the amplifier is a unity gain buffer; also known as a voltage follower because the output voltage follows or tracks the input voltage.

17. When should I use voltage follower?

A voltage follower can be used as a buffer because it draws very little current due to the high input impedance of the amplifier, thus eliminating loading effects while still maintaining the same voltage at the output.

18. Is voltage follower non inverting amplifier?

The voltage follower, like a non-inverting amplifier, has very high input impedance and very low output impedance. ...In the voltage follower, the resistor R1 is equal to zero and R2 is infinite. So the gain of the voltage follower will be equal to 1. A Voltage follower is also commonly known as a Unity Gain Buffer

19. Can op amp amplify both AC and DC?

With direct coupling between op-amps' internal transistor stages, they can amplify DC signals just as well as AC (up to certain maximum voltage-rise time limits).

20. Which is better inverting or non-inverting amplifier?

Inverting op-amps provide more stability to the system than non-inverting op-amp. In case of inverting op-amp negative feedback is used that is always desirable for a stable system.

21. What is op amp and its application?

Op amps are used in a wide variety of applications in electronics. Some of the more common applications are: as a voltage follower, selective inversion circuit, a current-to-voltage converter, active rectifier, integrator, a whole wide variety of filters, and a voltage comparator.

22. How op amp is used in integrator?

As an op-amp integrator performs the function of mathematical integration. However, it can be used in analog computers. The operation of this circuit is, it generates an output which is proportional to the input voltage with time. So the output voltage will be determined with the primary output voltage at any time.

23. What is the purpose of integrator?

An integrator in measurement and control applications is an element whose output signal is the time integral of its input signal. It accumulates the input quantity over a defined time to produce a representative output. Integration is an important part of many engineering and scientific applications.

24. How does integrator circuit work?

The operational amplifier integrator is an electronic integration circuit. Based on the operational amplifier (op-amp), it performs the mathematical operation of integration with respect to time; that is, its output voltage is proportional to the input voltage integrated over time.

25. What is differentiator circuit?

In electronics, a differentiator is a circuit that is designed such that the output of the circuit is approximately directly proportional to the rate of change (the time derivative) of the input. ... The differentiator circuit is essentially a high-pass filter.

26. Why capacitor is used in integrator?

At this point the capacitor acts as an open circuit, blocking any more flow of DC current. ... If we apply a constantly changing input signal such as a square wave to the input of an Integrator Amplifier then the capacitor will charge and discharge in response to changes in the input signal

27. What is astable multivibrator using op amp?

The Op-amp Multivibrator is an astable oscillator circuit that generates a rectangular output waveform using an RC timing network connected to the inverting input of the operational amplifier and a voltage divider network connected to the other non-inverting input.

28. How does an op amp work as a comparator?

The comparator is an electronic decision making circuit that makes use of an operational amplifiers very high gain in its open-loop state, that is, there is no feedback resistor. ... In other words, the op-amp voltage comparator compares the magnitudes of two voltage inputs and determines which is the largest of the two.

29. What does comparator mean?

A device for comparing something with a similar thing or with a standard measure.

30. What is the use of astable multivibrator?

Astable multivibrator, in which the circuit is not stable in either state—it continually switches from one state to the other. It functions as a relaxation oscillator. Monostable multivibrator, in which one of the states is stable, but the other state is unstable (transient).