

## VIVA Questions of RC Differentiator and Integrator

### 1. What is RC integrator and differentiator?

For a passive **RC integrator** circuit, the input is connected to a resistance while the output voltage is taken from across a capacitor being the exact opposite to the **RC Differentiator** Circuit. ... The capacitor charges up when the input is high and discharges when the input is low.

### 2. Which application uses differentiator?

In ideal cases, a differentiator reverses the effects of an integrator on a waveform, and conversely. Hence, they are most commonly used in wave-shaping circuits to detect high-frequency components in an input signal. Differentiators are an important part of electronic analogue computers and analogue PID controllers.

### 3. What are the applications of integrator and differentiator?

Differentiators also find application as wave shaping circuits, to detect high frequency components in the input signal. The integrator circuit is mostly used in analog computers, analog-to-digital converters and wave-shaping circuits.

### 4. Why is RC differentiator known as a high pass filter?

The **High-pass RC** circuit is also known as a **differentiator**. The name **high pass** is so called because the circuit blocks the low frequencies and allows **high** frequencies to **pass** through it. It is due to reason that reactance of the capacitor decreases with the increasing **frequency**.

### 5. Why capacitor is used in differentiator?

The **capacitor** only allows AC type input voltage changes to pass through and whose frequency is dependant on the rate of change of the input signal. ... At higher frequencies the reactance of the **capacitor** is much lower resulting in a higher gain and higher output voltage from the **differentiator** amplifier.

### 6. What is difference between integrator and differentiator?

A **differentiator** circuit produces a constant output voltage for a steadily changing input voltage. An **integrator** circuit produces a steadily changing output voltage for a constant input voltage.

### 7. What is the function 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.

### 8. What is the output of differentiator?

A **differentiator** circuit is one in which the voltage **output** is directly proportional to the rate of change of the input voltage with respect to time. This means that a fast change to the input voltage signal, the greater the **output** voltage change in response.

### 9. What is the output of integrator?

The **output** of an **integrator** is out of phase by  $180^\circ$  with respect to the input, since the input is applied to the inverting input terminal of the op-amp. Integrating circuits are generally used to generate ramp wave from square wave input.

### 10. Why integrator is a low pass filter?

**Low-pass** circuits also known as an **integrator**. The name **low-pass** circuit is designated because of the fact that the circuit **pass low** frequencies but attenuates high frequencies. In order to achieve a good integration, the following conditions must be satisfied.