Standard

Unit 20 – Answers

Q1 Why does an Op amp have a + Vin and a -Vin?

Vin + is noninverting input.

Vin – is an inverting input.

Q2 What are the two golden rules when using Op amps?

These ideal characteristics can be summarized by the two very important Golden Rules:
1. In a closed loop configuration, the output drives the VIN+ and VIN– to be equal.
2. The inputs draw no current.

Q3 What is an open and closed loop amplifier?

Open loop has no feedback.

Closed loop has feedback.

Q4 What is Common Mode rejection?

Common Mode Rejection Ratio (CMRR) is the ability of the op-amp to reject the same signal on both inputs. This is important for the attenuation of noise common to both inputs.

Q5 What is EMI?

EMI can be defined as interference that impacts the functioning of an electronic device.

Q6 What is EMC?

EMC is a measure of a device's ability to operate as intended in its shared operating environment while not affecting the ability of other equipment within the same environment to operate as intended. They must all play together.

Q7 What is an example of a natural EMI in a receiver?

Lightening causing noise in the receiver.

Q8 What are the four basic methods for eliminating the elects of EMI on a system?

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Filtering - EMI filters can suppress electromagnetic noise transmitted through conduction. These filters extract any unwanted signals while allowing desirable signals to pass. A choke is an example of a Low Pass Filter removing EMI.

Grounding - Grounding devices provides a low impedance path for EMI to dissipate and can mitigate the ill-effects of EMI.

Decoupling – Decoupling capacitors in circuits is good practice. Decoupling capacitors in power supplies reduce the possibility of EMI entering the device from the power mains.

Shielding or Blocking - EMI shielding is the practice of blocking the electromagnetic field from impacting the device. These barriers are made of conductive or magnetic materials. You will find EMI shielding in your cell phones, in the microwave oven door, as well as your computers and keyboards.

A Faraday shield is a good example of blocking EMI.

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