Chapter 9 Answers

Q1 What is EMI and EMC?

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

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.

Q2 What are the two types of RFI?

- **Conducted EMI is unwanted high frequencies that ride on the AC wave form.**
- **Radiated EMI is emitted through the air**.

Q3 What is intermodulation?

Intermodulation distortion is the undesired combination of several signals in a nonlinear device which produces a new unwanted frequency. This new frequency can cause interference in adjacent receivers. Intermodulation can also be produced in rusty or corroded tower joints, guy wires, turnbuckles and anchor rods or any nearby metallic object acting as a nonlinear "mixer/rectifier" device.

Q4 What is an example of a natural EMI in a receiver?

Natural origins - electrostatic interference and electrical storms.

Q5 What are the four basic methods for eliminating the elects of EMI on a system?

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.

