

ECE Interview Questions with Answers

On

Analog Communication

1. What is sampling? What is Sampling Theorem?

Ans: Sampling is defined as the process in which an analog signals are converted into digital signals. It means that a continuous time signal is converted into a discrete time signal.

Sampling Theorem is defined as : 'The continuous time signal that can be represented in its samples and recovered back if the sampling frequency (f_s) is greater than the maximum frequency of the signal (f_m) that is $f_s > 2f_m$ '.

2. Define PAM and write down its drawbacks?

Ans: Pulse Amplitude Modulation is the process by which the amplitude of the regularly spaced pulses varies according to the the amplitude of the modulating signal.

The drawbacks are:

- a. Since the amplitude of the pulses varies therefore the peak power of the modulating s/g is much greater.
- b. The bandwidth required for transmitting is greater since the amplitude varies.

3. What is Modulation? What happens in over modulation?

Ans: Modulation is defined as the process in which some characteristics of the signal called carrier is varied according to the modulating or baseband signal. For example - Amplitude Modulation, Phase Modulation, Frequency Modulation.

In case of over modulation, the modulation index is greater than one and envelope distortion occurs.

4. What do you mean by Nyquist rate?

Ans: In case of Nyquist rate, the sampling frequency is equal to the maximum frequency of the signal and therefore the successive cycles of the spectrum does not overlap.

5. What do you mean by FM and classify FM.

Ans: Frequency Modulation can be defined as the frequency of the carrier (ω_c) is varied acc. to the modulating signal about an unmodulated frequency.

FM are of 2 types:

- a. Narrowband FM
- b. Wideband FM

6. What is under sampling?

Ans: Under sampling is also known as **aliasing effect** in which the the sampling frequency is less than the maximum frequency of the signal and therefore the successive cycles of the spectrum overlap.

7. State the advantages of superheterodyning.

Ans: The advantages are:

- a. High selectivity and sensitivity.
- b. No change in Bandwidth that is bandwidth remains same all over the operating range.
- c. High adjacent channel rejection.

8. What is multiplexing? Name the types of multiplexing.

Ans: Multiplexing is defined as the process in which a number of message signals are combined together to form composite signals so that they can be transmitted through the common channel.

The two types of multiplexing are:

a. Frequency Division Multiplexing: In this technique, fixed frequency bands are allotted to every user in the complete channel bandwidth. Such frequency is allotted to user on a continuous basis.

b. Time Division Multiplexing: When the pulse is present for the short time duration and most of the time their is no signal present in-between them than this free space between the two pulses can occupied by the pulses from other channels. This is known as Time Division Multiplexing.

9. What is Amplitude Modulation?

Ans: Amplitude Modulation is defined as the process in which the instantaneous value of the amplitude of the carrier is varied according to the amplitude of the modulating or base band signal.

10. How can be aliasing be avoided?

Ans: Aliasing can be avoided if:

- a. Sampling frequency must be greater than the frequency of the modulating signal.

b. The frequency should be band limited to maximum frequency of the signal(f_m) Htz.

c. If pre-alias filter is used.

