QUESTIONS AND ANSWERS ON PULSE CODE MODULATION

Q.1. Define Pulse Code Modulation?
Ans. Pulse Code Modulation is a type of pulse modulation like Pulse Amplitude Modulation, Pulse Width Modulation, or Pulse Position Modulation but there is an important difference between them. Pulse Amplitude Modulation, Pulse Width Modulation, Pulse Position Modulation are analog pulse modulation systems where as Pulse Code Modulation is a digital modulation system. That means the output of Pulse Code Modulation is in the coded digital form.

Q.2. What is line coding?
Ans. The digital data can be transmitted by various transmission or line codes such as on off, polar, bipolar etc., this is called line coding. Line Codes are basically used for the data transport and thus also known as the Digital Baseband Transmission Method. In Line Coding, we use waveform pattern of different voltages and currents to represent high (1) or low (0) levels of a digital data transmission link.

Q.3. What is the difference between source coding and line coding?
Ans. Source coding are used in order to convert an analog signal to its digitally coded equivalent signal. This means output of a source coder is a train of binary digits that is 0s and 1s. The line coding technique convert the stream of binary digital into format of codes. Examples of PCM are RZ, NRZ etc. and source coding are Delta and PCM modulation.

Q.4. What are the disadvantages of PCM?
Ans. Encoding, decoding and quantizing circuitry of PCM is complex. PCM require large bandwidth as compared to the other systems.
Q.5. What are the disadvantages of delta modulation?
Ans. Following are the two disadvantages of delta modulation-

1. **Slopes overload distortion** which occurs due to the fast variation in the modulating signals.
2. **Granular or idle noise** which occurs when the variation in the modulated signals is small as compared to the step size of the waveform.

Q.6. How many types of Pulse digital scheme are there?
Ans. There are two types of pulse digital scheme, one is Pulse Code Modulation system and other is Delta modulation system.

Q.7. What are the properties of line coding?
Ans. Error detection and correction capability, favourable power spectral density, power efficiency should be low, bandwidth must be small.

Q.8. What is the effect of intersymbol interference?
Ans. It will introduce error in the decision at the recovering output. That means receiver gets confused about what is received, logic 1 or logic 0. In the absence of ISI and noise, the transmitted bit can be decoded correctly at the receiver.

Q.9. How ISI can be reduced?
Ans. Instead of rectangular pulse, if we transmit a sine pulse then the ISI can be reduced to zero. And we use filter where frequency response is exactly flat in pass band.

Q.10. What is ASK?
Ans. In this method, there is only one unit energy carrier and it is switched on or off depending upon the input binary sequence. It is also called On Off.