1. Which technique is used to convert analog signals into digital signals by sampling the amplitude of the signal at regular intervals?

A) Pulse Code Modulation (PCM)
B) Companding
C) Quantization
D) Inter Symbol Interference

Answer: A) Pulse Code Modulation (PCM)

Explanation: Pulse Code Modulation (PCM) samples the amplitude of an analog signal at regular intervals and quantizes each sample to a discrete value.

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2. What is the term for the process of approximating the continuous amplitude of an analog signal with a finite set of discrete levels?

A) Pulse Code Modulation (PCM)
B) Quantization
C) Companding
D) Encoding

Answer: B) Quantization

Explanation: Quantization involves approximating the continuous amplitude of an analog signal with a finite set of discrete levels.

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3. Which of the following techniques reduces the dynamic range of a signal before quantization and expands it back after sampling to improve signal-to-noise ratio?

A) Pulse Code Modulation (PCM)
B) Quantization
C) Companding
D) Inter Symbol Interference

Answer: C) Companding

Explanation: Companding is a technique that compresses the dynamic range of a signal before quantization and expands it back after sampling, reducing quantization noise and improving the signal-to-noise ratio.

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4. What is the unwanted noise introduced during the quantization process called?

A) Pulse Code Modulation (PCM)
B) Companding noise
C) Quantization noise
D) Interference noise

Answer: C) Quantization noise

Explanation: Quantization noise is the unwanted noise introduced during the quantization process when converting analog signals to digital.

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5. Which term refers to the distortion of a signal caused by overlapping symbols in a communication system?

A) Pulse Code Modulation (PCM)
B) Quantization distortion
C) Companding distortion
D) Inter Symbol Interference (ISI)

Answer: D) Inter Symbol Interference (ISI)

Explanation: Inter Symbol Interference (ISI) occurs when symbols in a communication system overlap, causing distortion in the received signal.

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6. Which graphical representation is used to analyze the quality of a digital communication system by observing the signal’s amplitude over time?

A) Eye pattern
B) Pulse Code Modulation (PCM)
C) Quantization graph

D) Companding pattern

Answer: A) Eye pattern

Explanation: An eye pattern is a graphical representation used to analyze the quality of a digital communication system by observing the signal's amplitude over time.

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7. Which encoding technique represents data as variations in the presence or absence of signal transitions?

A) On-Off signaling
B) Polar signaling
C) Manchester code
D) Differential encoding

Answer: A) On-Off signaling

Explanation: On-Off signaling represents data as variations in the presence or absence of signal transitions.

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8. Which encoding technique ensures regular signal transitions to maintain synchronization and reduce DC component in the signal?

A) Bipolar signaling
B) RZ signaling
C) AMI (Alternate Mark Inversion)
D) Manchester code

Answer: D) Manchester code

Explanation: Manchester code ensures regular signal transitions to maintain synchronization and reduce the DC component in the signal.

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9. What is the advantage of using Differential Encoding in communication systems?

A) Efficient bandwidth utilization
B) Reduced susceptibility to noise
C) Simplified receiver design
D) Increased data transmission speed

Answer: B) Reduced susceptibility to noise

Explanation: Differential Encoding reduces susceptibility to noise as it encodes data based on changes rather than absolute signal levels.

10. In which modulation technique is the change in signal level proportional to the difference between the current and previous signal levels?

A) Delta modulation
B) Adaptive modulation
C) Pulse Code Modulation (PCM)
D) Differential encoding

Answer: A) Delta modulation

Explanation: Delta modulation is a modulation technique where the change in signal level is proportional to the difference between the current and previous signal levels.