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Date

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BCS (2CSE202)

(1) Draw neat and clean signal waveform for following line-coding techniques.

Data : 10110110

(i) Manchester Encoding

(ii) Polar RZ

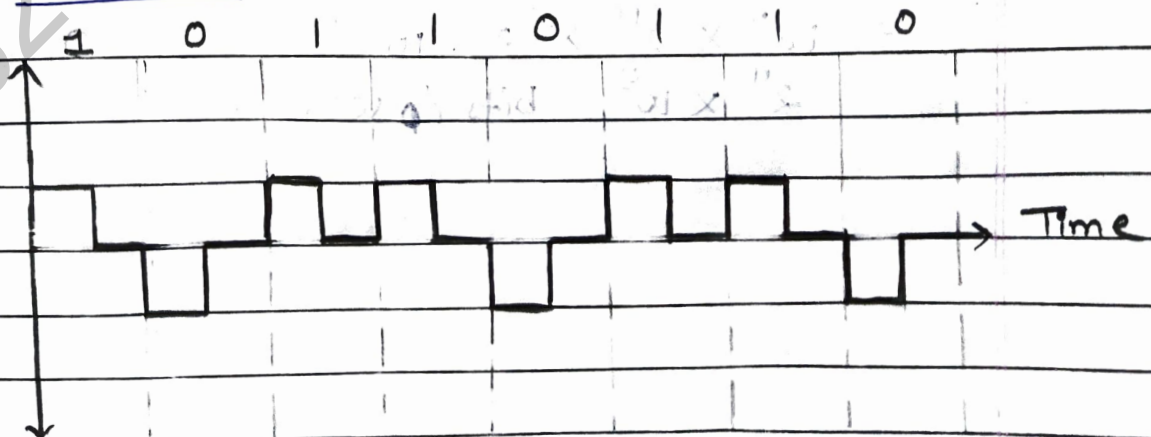
(iii) AMI

Solⁿ Given Data : 10110110

(i) Manchester Encoding

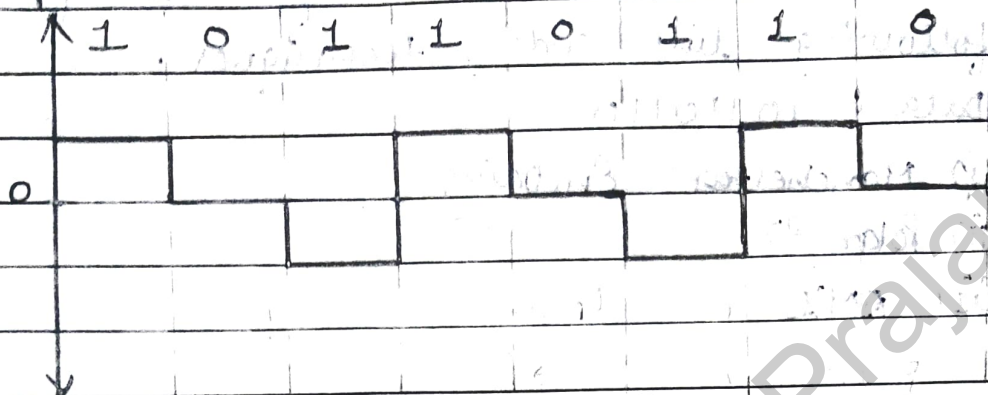


(ii) Polar RZ :-



(iii) AMI

Amplitude



(2)

Given analog signal of amplitude $= +10V$ to $10V$
 maximum frequency $= 10\text{ kHz}$
 converted from Analog to Digital by 1024 different
 amplitude level. Calculate bitrate of output
 signal

Ans

~~to consider~~ bits

Bitrate \Rightarrow frequency \times amplitude level \times signal
 of amp.

$$= 10 \times 10^3 \times 1024 \times 20$$

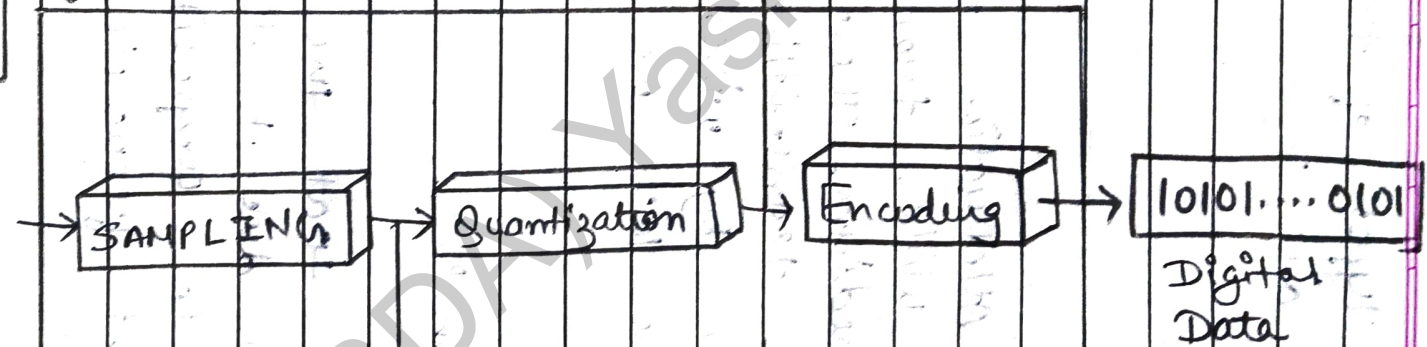
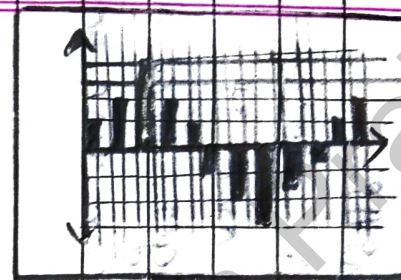
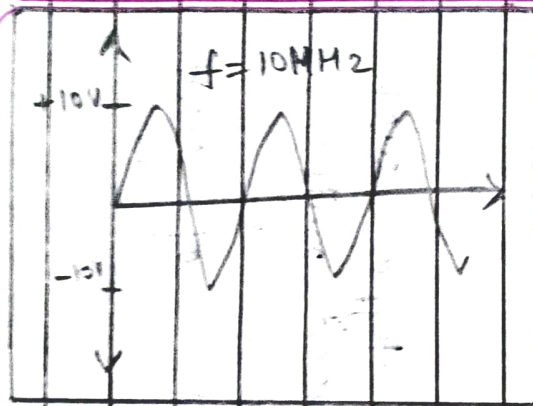
$$= 10^4 \times 2^{10} \times 2 \times 10$$

$$= 2^{11} \times 10^5 \text{ bits/sec.}$$

A2

Analog Signal

Quantized Signal



PAM SIGNAL

Q3
Soln

There are three types of transmission impairment. They are :-

- (a) Attenuation
- (b) Delay Distortion
- (c) Noise

(a) Attenuation :- Attenuation means loss of energy while transmitting data through medium. There is loss of energy while transmission and it is some reason by wires get heated. To compensate the loss we can use an amplifier.

(ii) Delay Distortion :-

Distortion means that the signal changes its form due to the transmitter. It can occur in composited signal made of different frequencies.

(iii) Noise :-

Noise are of various types such as thermal noise, induced noise, cross talk, etc. Thermal noise is created by random motion of electrons in ~~wire~~ wire.

⇒

For received signal quality a term is used which is SNR, i.e. signal to noise ratio.

$$\text{SNR} = \frac{\text{power of signal}}{\text{power of noise}}$$

∴ Here of signal power is 10 dB.

$$\therefore \text{SNR} = \frac{10 \text{ dB}}{\text{power of noise (dB)}}$$

Observations :- If power of noise is increased then SNR will decrease and if power of noise is decreased, SNR will increase. The higher the SNR, there will be good quality of signal received.