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Data Communication & Networks

Multiple Choice Questions.

1: Network
2: Physical layer
3: Network layer
4: Network
5: 10
6: 2 times
7: 400KHz
8: analog
9: ~~digital~~ Hybrid
10: bandwidth

Question # 2:-

1: Advantages:-

i: High bandwidth
ii: Signal authentication is less
iii: Resistance of noise.

2: The numbee of channels is 10. The total bandwidth of 10 channels is 10X4 = 40KHz We have a guard bands of bandwidth 500 Hz. We have to convert into KHz by deviding the value with 1000. So the bandwidth of the guard bands is 500Hz ÷ 1000 = 0.5KHz

2:

We must require 9 guards bandwidth to multiplex 10 voice channels. So the total bandwidth of guard bands is $9 \times 0.5 = 4.5$ KHz

Hence the required bandwidth when we need to multiplex 10 voice channels is

$$40\,kHz + 4.5\,KHz = 44.5\,KHz.$$

3:

10 sources

Six with bit rate of 200 kbps

Four with bit rate of 400 kbps

make it same rate, by rearranging

$6 \times 200 = 1200 = 3 \times 400$ kbps

Total seven now with bit rate of 400 kbps

i. The size of the frame = $7 \times 1 = 7$ bits because o/p frame carries 1 bit from the seven 400 kbps channel.

ii. Output frame rate = 400×1000

$= 400000$ frame/sec

iii. The duration of frame = $\frac{1}{\text{frame rate}}$

$= \frac{1}{400000} = 2.5\,\mu s$

iv. The O/P data = (400000 frame/sec) × (7bits/frame)

$= 2.8$ mbps.

7. 4: Analog-to-analog conversion, or modulation, is the representation of analog information by an analog signal. It is a process by virtue of which a characteristic of carrier wave is varied according to the istantaneous amplitude of the modulating signal.

5: In analog transmission, the transmitting device produces a high frequency signal that acts as the basis for the information signal. This basic signal is called a network signal or network frequency. The recieving device is plugged into the network company signal frequency that you expect from the sender.

6: a) Nyquist Sampling rate:.

Sampling rate (fs) >= 2 * ~~frame~~ fmax = 2 x 200kHz

Therefore, Nyquist Sampling rate is >= 400000 samples/s.

b) Bits per sample:.

for the rate provided, bits per sample (nb) for fs 400000 samples/sec:

Bit rate (nb) = 400000 * 10 = 4Mbps.

7: Data is the smallest bussiness that can represent a piece of information (slightly) A signal object is a short digital unit. Data objects are what we need to send signal objects are what we can send.

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