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Subject: CCN

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Q No 1(a) Briefly describe the layers in the internet models are the network support layers?

ANS:- The network support layers are the physical, data link and network layers.

Q No 1(b):- Describe three types of transmission impairment?

Ans:- Three types of transmission impairment are.

- 1) Distortion
- 2) Attenuation
- 3) Noise.

1) Distortion:-

Distortion means signal changes its ~~form~~ form or shape.

2) Attenuation:- Attenuation is due to loss of energy by a signal time.

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Noise:- Several type of noise as thermal noise, induced noise, crosstalk noise, impulse noise may corrupt the signal

Q No 1 (c) What does the channel capacity have to do with communication?

Ans:- The channel capacity determine the theoretical maximum bit rate of a noisy channel.

Q No 1 (d) Compare and contrast flow control and error control?

Ans. Flow control:- when sending data from one device to another device the receiving end is known as destination of the receiver and the sending node is known as the source, send it as the transmitter.

Flow control is meant for the proper transmission of the data from sender to receiver

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Error Control

means for free data to be sent as a sequence of frames. some frames might not reach the destination. Error control is delivering the error-free data to the receiver.

Q No 1 (e) Explain piggybacking and its usefulness in which layer of OSI it is used and why?

Ans In reliable full-duplex data transmission the technique of hooking up acknowledgment onto outgoing data frames is called piggybacking.

Piggybacking is used to improve the efficiency of bidirectional transmission. When a frame is carrying data from "a" to "b", it can also carry control information about frames from b. When a frame is carrying data from "b" to "a" it can also carry control information about frame a.

Transport layer of OSI
 (HDLC)

is used in

Q No 1 (7)

Ans Brief HDLC w.r.t station types, transfer modes, frame types and flag field purpose, High-Level Data Link Control (HDLC) is a group of communication protocols of the data link layer for transmitting data between network points. Since it is a data link protocol, data is organized into frames.

Transfer mode

HDLC support two types of transfer mode. Normal response mode and asynchronous balance mode.

Normal response mode

Here two types of stations are there. A primary station that send command and secondary station that can respond to received command. It is used for both point-to-point and multipoint.

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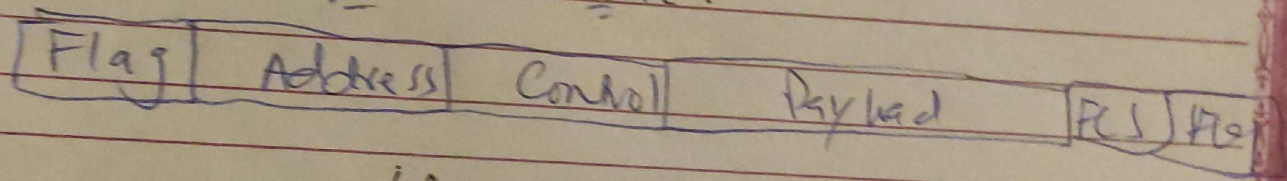
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Asynchronous balanced mode

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configuration is balanced i.e. each station can both send commands and response to commands. it is used for only point-to-point communication.

HDLC Frame.



Frame types are.

- (1) I-Frame
- (2) S-Frame
- (3) U-Frame

Flag show the start and end of the frame.

Flag Field

Q No 1 (a) Bit (b) ~~control~~ protocols for noiseless channel?

Ans Noiseless channel protocols are.

1) Simplex protocols: H H H

2) Flow or error control.

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It is unidirectional protocols in which data frames are travelling in only one direction from the sender to receiver.

Q No 1 (H) What is differential encoding? Also explain difference between NRZ-L and NRZ-I and name the coding scheme of multilevel binary and bi phase.

Ans - Differential encoding is a digital encoding technique whereby a binary value is denoted by a signal change rather than a particular signal state.

Difference b/w NRZ-I and NRZ-L
Non return to zero level (NRZ-L)

It is a data encoding system scheme in which a negative voltage is used to represent binary one and a positive voltage is used to represent binary zero.

Coding Scheme

Unipolar, polar and Bipolar
coding scheme.

Q2. (i) Suppose a computer sends a packet at the network layer to another computer somewhere in the internet. The logical destination address of the packet is corrupt. What happens to the packet? How can the source computer be informed of the situation?

Ans. Before using the destination address in an intermediate or the destination node, the packet goes through error checking that may help the node find the corruption (with a high probability) and discard the packet. Normally the upper layer protocols will inform the source to resend the packet.

Q2. (ii) A device is sending out data at the rate of 1 Mbps. How long does it take to send out a single character (8 bits)?

Ans. A device sending data rate of 8 bits
 = sending speed = 1 Mbps

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The time of 1 bit is 0.040 msec

$$8 \times 0.040 \text{ msec}$$

$$\Rightarrow 0.32 \text{ msec}$$

It will take 0.32 msec to send out a single character (8 bits)

Q No 2 (K) we have a channel with 4 KHz bandwidth. ?

Ans

Given $B = 4 \text{ KHz}$ $N = 100 \text{ keys}$
To find SNR_{dB} and SNR

Sol

$$100 \times 10^2 = 4 \times 10^3 \times \text{SNR}_{\text{dB}} / 3$$

$$\Rightarrow 100 \times \frac{3}{4} = \text{SNR}_{\text{dB}}$$

$$\Rightarrow 75 = \text{SNR}_{\text{dB}}$$

$$\text{SNR}_{\text{dB}} = 10 \times \log_{10} \text{SNR}$$

$$= 75 = 10 \times \log_{10} \text{SNR}$$

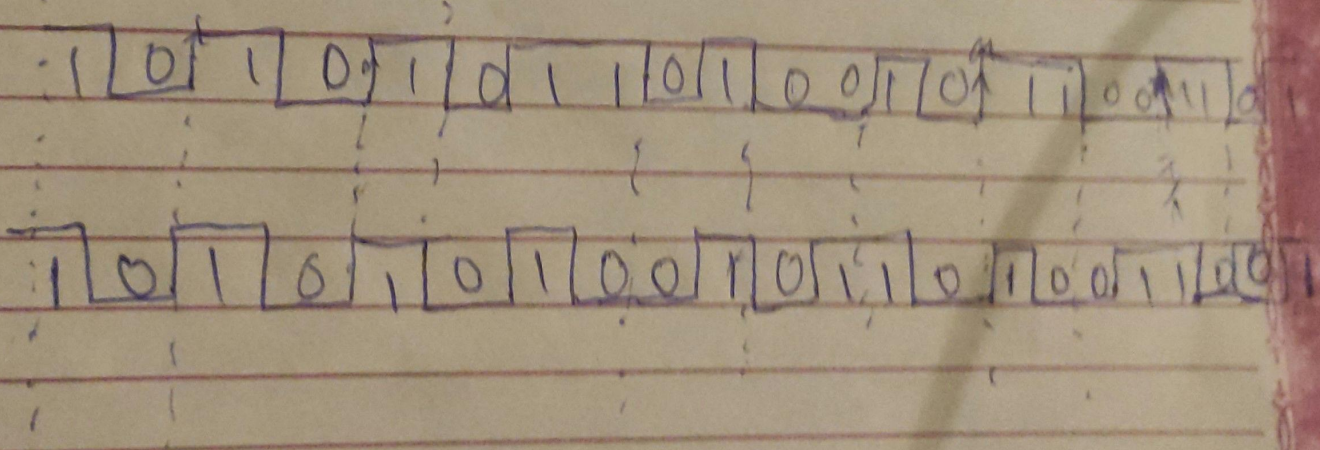
$$\text{SNR} = 10^{7.5}$$

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Q No 3 (L) The waveform here belong to a Manchester encoded binary data stream determine its starting and end of bit period (i.e. extract clock information) and give the data sequence.



QNO3 (m) Assume that the primary HDLC
station is NRM ?

Ans) high-level data link control
is a bit oriented code.
HDLC is based on IBM's
SDLC protocol which the layer
2 protocol of IBM (SNA)
it was extended and
standardized by the ITU
G1 LAP (link access procedure)