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Sub:- Computer network.
Sec:- B (03)

Answer 1:- Transmission speed = 20 bps
Time to travel 1 bit = 1/20 = 0.05 sec.
Propogation speed = 180 cm/ms.
Distance travelled = propogation speed x time
1 bit = 180 x 0.5
= 9m.

Therefore, the 1-bit delay in this network is equivalent to approx 9m of cable.

Answer 2:- Transmission time = 2x propogation time.
= 2x length / 250000
$= 8000 \times \frac{400}{250000} \Rightarrow 21$ cm

Answer 3:- Length = 12 km = 12000 m.
propogation speed r = 8 ns/m
No. of student in the ring = 40
frame size = 220 byte = 220 x 8 = 1760 bits.
Data rate = 100 mbps.

Answer 4:- The cable needed $^nC_2 = \frac{n(n-1)}{2}$

$n=6 \Rightarrow {}^6C_2 = \frac{6(6-1)}{2} = 3 \times 5 = 15$

No. of parts needed for each cable device
$n-1 \Rightarrow 6-1 \Rightarrow 5$ parts.

Answer 5:- (a) If the connection fails, the other connection will be working.

(b) If the other devices will still be able to send data through the hub. there will be no access to the device which has the failed connections to the hub.

(c) All transmission stops if the failure is in the bus if the drop line fails, only the corresponding device cannot be operate.

(d) The failed connections may disable the whole network unless it is a dual ring or there is a by pass mechanism.

Answer 6:- (a) E-mail is not an interactive application, Even if it is delivered immediatly, it may stay in the mail box of the recievers for a while. It is not sensitive to delay.

(b) we normally do not expect a file to be copied immediate by it is not very senstive to delay.

(c) Surfing the internet is an application very sensitive to delay, we except to get access, to the ~~size~~ site we are searching.

Answer 7:- In this case, the communication is only between a caller and the caller. A point to point connections provides a dedicated link between two devices & the other entire capacity of the link is reserved for transmission entire b/w those two devices, since only two devices are invertid in a wave telephone call, it is a point-point connection.

Answer 8:- a) Network layer (layer-3)
b) Data-link layer (layer-2)
c) physical-layer (layer-1)
d) Application layer (layer-7)

Answer-9 → (a) Presentation Layer
(b) Session Layer
(c) Transport Layer
(d) Session-layer
(e) Presentation-layer.

Answer 10: → If the physical destination address of a frame is corrupted during transmission, the frame is either delivered to the memory station if the corrupted address matches one one of the stations, or lost if it does not match any station. However, the error detection mechanism is most datalink protocols. will find the error and discard the frame.

Answer 11: → If the logical destination address of a packet becomes corrupted, the packet may not be delivered to the correct destination. The destination computer can send an ICMP message back to the source computer to inform in to the error, the source computer can take corrective action.

Answer 12:- i) Packet loss
ii) No response
iii) Error Handling.
iv) Timeouts.

when no, process with the specified destination port address is running, the transport layer cannot deliver the packet to any process, resulting in packet loss and communication failure.

Answer 13:- $2 \times 1\ MHz \times \log L = 4$ mbps bit rate
Signal level = 2 bit rate $= 2^2 = 4$.
bit rate 4 mbps & signal level is 4.

Answer 14:- Shannon Capacity formula : $C = B \times \log_2(1+SNR)$

Given,

$SNR = 0$

$C = B \times \log_2(1)$

Since,

$\log_2(1) = 0$ the channel capacity is this extremely noisy channel.

$\boxed{C = 0}$

Answer 15 :- Given,

Token ring LAN data rate = 3 mbps.

frame size = 200 bytes = $200 \times 8 = 1600$ bits.

Ring latency = 150 ms.

Now,

Round trip time = Ring latency $\times 2$

$= 150 \times 2 = 300$ ms.

Effective data rate of LAN = $\frac{\text{frame size}}{\text{Round trip time}}$

$= \frac{1600 \text{ bits}}{300 \text{ ms}} = \frac{5.333}{10^6}$ mbps.

$= 0.005333$ mbps, Ans.