1

30

25/8/20

Course code : CSE 303

Course title : Data communication

ID - 18101033

Semester - ~~1.2~~ 3.1

Sec : A

Scanned with CamScanner

ID - 18101033

1. NO. Qus. Ans

a) ID → 18101033

$x = 3+1 = 4$

$y = 3+1 = 4$

In mesh topology there are 4 computers or 4 nodes.

So, ~~for 4 nodes~~, $n = 4$

$$\text{links} = \frac{n(n-1)}{2}$$

$$= \frac{4(4-1)}{2}$$

$$= 6$$

6

In star topology there are 4 computers. We know that nodes are connected with ~~hud~~ hub in star topology. Here $n = 4$ so, the number

Scanned with CamScanner

ID-18101033

of the links is also 4.

In mesh topology every node is connected with each other. It is a use in office or bank. There is no traffic problems, robust, easy isolation, security is quick good. But if one node is fail then the whole network goes down.

In star ~~tolog~~ topology there is a central connection hub. All the nodes are connected with hub. It is a less expensive, robust topology. If one device ~~faild~~ failed, the whole network is still working.

So I think ~~star~~ topology is more secure network than mesh topology.

Scanned with CamScanner

ID-18101033

Because in ~~star~~ topology every nodes are performing independently. ~~Th~~ So here the data is more secure in each device. If one device ~~failed~~ faield, othe devices are still working. But this is not possible in mesh topology.

b) Data communication means exchange of data between two devices via some transmission medium.

Half duplex data flow :-

Advantage

1) In half duplex both transmit and receive possible.

Scanned with CamScanner

5

ID-18101033

disadvantage

1) In half duplex data flow is not possible at a time.

Full duplex

advantage

1) full duplex can transmit and receive data at a time.

4

disadvantage

1) No proper bandwidth utilization as the same line is used for sending & receiving data at the same time.

Scanned with CamScanner

ID-18101033

2. NO. Qus. Ans

ID → 18101033

$x = 3^2 \bmod 6 = 9 \bmod 6 = 3$

$y = (3+1) \bmod 6 = 4 \bmod 6 = 4$

so I will be in PC3 and my friend will be in PC4.

~~from~~ from PC3 to PC4 →

frame :

MAC of D	MAC of r30	IP of D	IP of ~~r30~~ E	6000	7000	DATA	Trailer

MAC of r31	MAC of r41	IP of ~~r31~~ D	IP of E	6000	7000	DATA	trailer

Scanned with CamScanner

ID - 18101033

12

MAC of r40	MAC of E	IP of D	IP of E	6000	7000	DATA	trailer

b) Data link layer is responsible for moving frames from sender to receiver. ~~In~~ Data link layer handle Error control and flow control.

<u>Flow control</u>: If the rate at which the data are receive by the receiver is less than the rate at which data is produced in the sender, then the flow control mechanism ~~ave~~ control the flow

Scanned with CamScanner

ID-18101033

and avoid the overflow.

Error control: Error control is normally achieved when a trailer added to the end of the frame. Data like layer add a error control mechanism to detect and retransmit damaged or lost frame.

Transport layer:-

Flow control: control the amount of data being transmitted. Flow control at this layer is performed ~~and to~~ end to end rather than ~~a single~~ across a ~~sigle~~ single link.

Scanned with CamScanner

9

18101033

6

Error control: Error control is performed process to process rather than across a single link.

3. NO. Qus. Ans.

a) ID → 18101033

$x = 33$

The loss in ~~a~~ the cable is decibels is $(33 \times (-0.3) = -9.9$ dB.

$$dB = 10 \log_{10} \frac{P_2}{P_1}$$

$$\Rightarrow 10 \log_{10} \frac{P_2}{P_1} = -9.9$$

$$\Rightarrow \log_{10} \frac{P_2}{P_1} = -0.99$$

Scanned with CamScanner

10

18101033

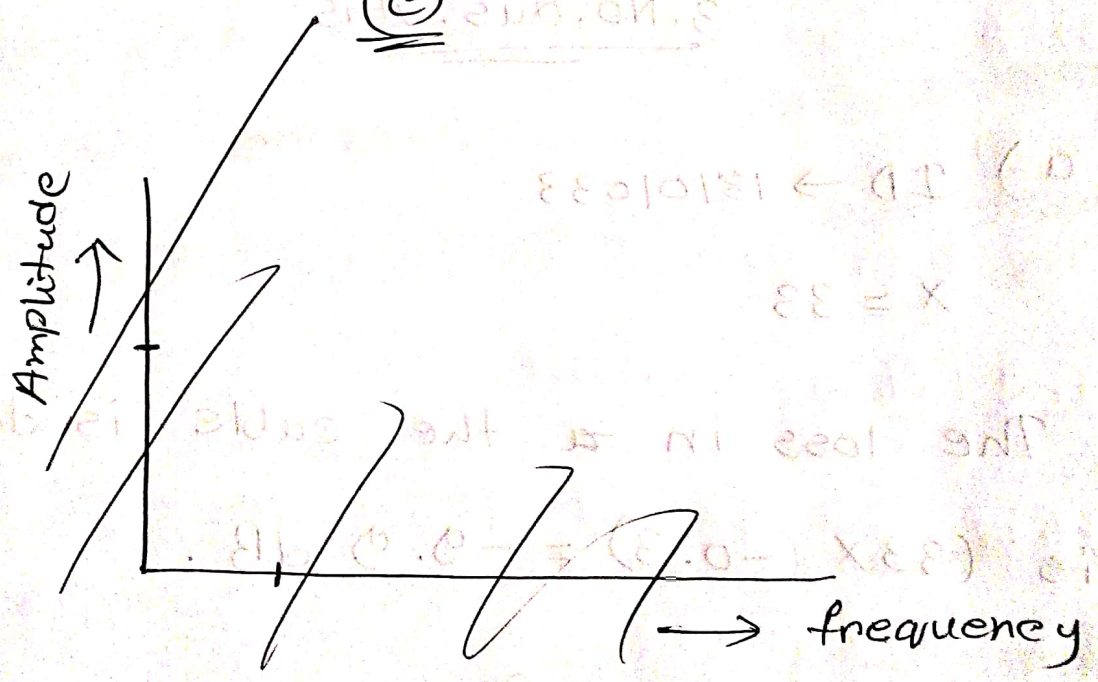
$\Rightarrow \frac{P_2}{P_1} = 10^{-0.99}$

$\Rightarrow P_2 = 0.102 \times 2$

$= 0.204\ mW$

(c)

1)



Scanned with CamScanner

11

18101033

b) Shannon,

capacity = B * $\log_2 L$ (1+SNR)

Shannon explain about the capacity or upper limit.

Nyquist,

2

Bit rate = 2 * Bandwidth * $\log_2 L$

Scanned with CamScanner