

Course Details

Course Title: Computer Communication Network
 Instructor: _____

Module: 06
 Total Marks: 30

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- Q1. (a)
1. _____ topology has unidirectional movement of traffic.
 2. Set of rules that govern communication is called _____
 3. _____ of a network is the frequency of failure and network recovery time after a failure is measured.
 4. ASK, PSK, FSK and QAM are all examples of _____ modulation.
 5. Data synchronization is a function related with _____ layer.
 6. The _____ layer changes bits into electromagnetic signals.
 7. The information to be communicated in a network is called the _____.
 8. _____ topology requires the maximum number of I/O ports.
 9. A signal that repeats itself is a _____ signal.
 10. A 56k modem can download at a rate of _____ Kbps and upload at a rate of _____ Kbps.
 11. In mesh topology, if there are five nodes then there will be _____ links.
 12. When data is transmitted from device A to device B using internet model, the header from A's layer 4 is read by B's _____ layer.
 13. A _____ device will convert an analog signal to a digital signal.
 14. _____ is the collection of all the component frequencies.

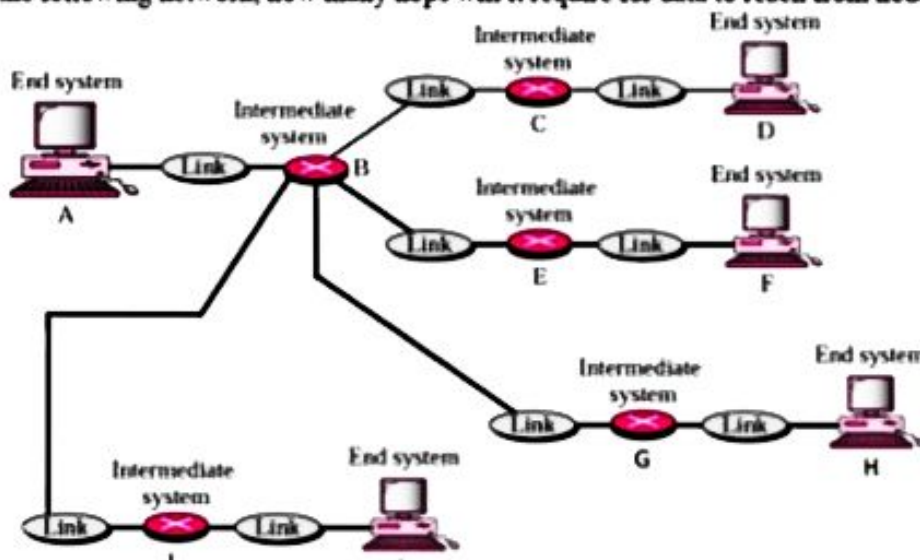
Marks 14
 CLO 1

- Q2. (a)
1. How are frames different from packets? Explain with examples.
 2. A phone line being analog can we send digital data on phone lines? Support your answer with examples.
 3. Give some details about fault tolerance, which network topologies have fault tolerance capability?
 4. How is logical addressing different from physical addressing? Support your answer with examples.
 5. A local telephone company wants to connect the LANs in all its offices throughout a city. For this case which network category would be used?

Marks 10
 CLO 1

- Q3. (a) Consider the following network, how many hops will it require for data to reach from node A to node J.

Marks 04
 CLO 1



- (b) A Sine wave has a frequency of 135 Hz. What is its period?

Marks 02
 CLO 1

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FILL IN THE BLANKS:

Q₂

(a)

(2) Ring topology

(3) Reliability

(5) Data link layer

(7) Message

(9) Periodic signal

(11) 10 links

(13) ADC

(2) Protocol

(4) Digital Modulation

(6) Physical layer

(8) Mesh topology

(10) 56.6 ; 33-6

(12) Transport layer

(14) frequency spectrum

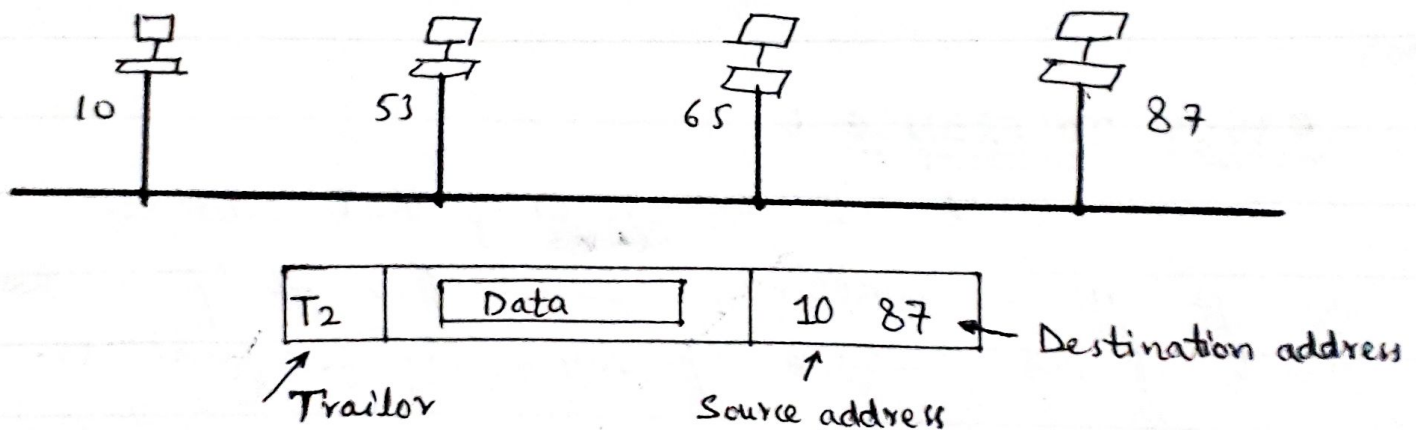
Q2 (a)

(a) Difference b/w Packet & Frame:

PACKET	FRAME
<p>Encapsulated unit created at the network layer of the OSI model</p>	<p>Encapsulated unit created at the data link layer of the OSI.</p>
<p>Ex: IP-Packet</p>	<p>Ex: Ethernet Frame</p>
<p>Packet contains Source & destination IP address along with Top layer data.</p>	<p>Frame contains Source & destination MAC address along with Top layer data.</p>
<p>Segment is encapsulated within a packet. Hence segment is the data part.</p>	<p>Packet is encapsulated within a frame. Hence packet is the data part.</p>
<p>Thus, a packet typically contains logical address information.</p>	<p>Thus a frame typically contains physical address information.</p>

Example :

In below figure a node with physical address 10 send a frame to a node with physical address 87. The two nodes are connected by a link. At the data link level this frame contains physical addresses in the header. These are the only addresses needed. The rest of the header contains other information needed at this level. The trailer usually contains extra bits needed for error detection.

**Example :**

In transport layer communication. Data coming from the upper layer have port addresses j & k (j is the address of the sending process, & k is the address of the receiving process). Since the data size is larger than the network layer can handle, the data are

Split into two packets, each packet retaining the port addresses (j & k). Then in the network layer, network addresses (A & P) are added to each packet.

(2)

Telephone companies provide two types of services:
① analog & ② Digital.

(3)

FAULT TOLERANCE :

It is the property that enable a system to continue operating properly in the event of the failure of some its components.

MESH NETWORK TOPOLOGY :

It is most fault tolerant and has most redundancy. In a mesh topology, all devices ~~are the network~~ are connected directly to every other device on the network.

(4)

Difference b/w Logical Address & Physical Address:

Basis of Comparison	LOGICAL ADDRESS	PHYSICAL ADDRESS
Description	Logical address is the address that is generated by the central processing unit (CPU) in perspective of a program. Logical address can also be referred to as a virtual address.	Physical address is a location that exist in the memory; it allows accessing a particular storage cell in the main memory.
Address Space	Logical address space is the set of all logical addresses generated by CPU for a program.	Physical address space is the set of all physical address mapped to corresponding logical addresses
Visibility	The logical address exists virtually and does not have a specific location to exist physically in	The physical address is an accessible physical location existing within the memory.

memory unit hence it is also known as virtual address

Generation

The logical address is generated by the central processing unit

Physical address is computed by memory management unit.

Use

The Physical address helps to identify a location in the main memory

The logical address helps to obtain the physical address.

User

The user program can use the logical address to access the physical address.

The user program does not have the ability to view the physical address directly

Rebooting

Logic address is erased when the system is rebooted

Physical address is not effected when the system is rebooted

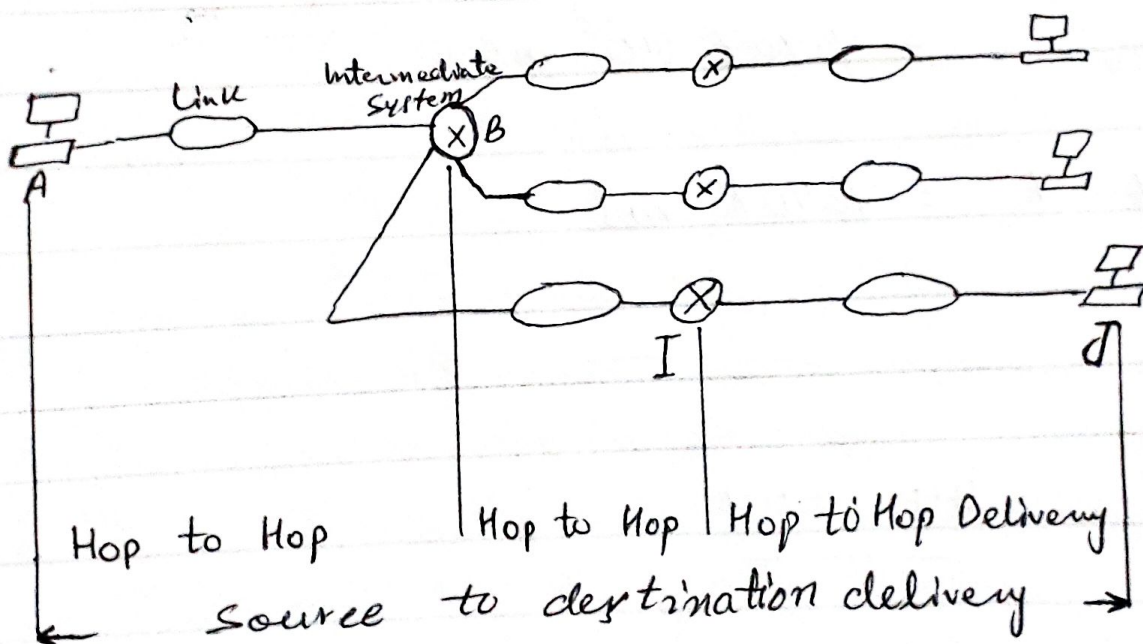
(5)

For this case MAN's Network category would be used.

Q 3:

(a)

There are three hops



The network layer "A" sends the packet to the network layer "B". When the packet arrives at router B, the router makes a decision based on the packet's destination "J" of the packet. The network layer at "B" therefore, sends the packet to the network layer at "I". The network layer "I" in turn sends the packet to the network layer at "J".

Given Data:

(b) frequency 135 Hz
Period = ?

Period 7.407 ms

Solution

$$T = 1/f$$

$$= 1/135 = 0.007407 \text{ s} =$$

$$= 7.407 \times 10^{-3} \text{ ms}$$

Period 'T' = 7.407 ms

THE END