

Aub

Course Details

Course Title: Computer Communication Network

Module: 06

Instructor: Sir Waqar Khan

Total Marks: 30

Student Details

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Q1.	(a)	<ol style="list-style-type: none"> <li>_____ topology has unidirectional movement of traffic.</li> <li>Set of rules that govern communication is called _____</li> <li>_____ of a network is the frequency of failure and network recovery time after a failure is measured.</li> <li>ASK, PSK, FSK and QAM are all examples of _____ modulation.</li> <li>Data synchronization is a function related with _____ layer.</li> <li>The _____ layer changes bits into electromagnetic signals.</li> <li>The information to be communicated in a network is called the _____.</li> <li>_____ topology requires the maximum number of I/O ports.</li> <li>A signal that repeats itself is a _____ signal.</li> <li>A 56k modem can download at a rate of _____ Kbps and upload at a rate of _____ Kbps.</li> <li>In mesh topology, if there are five nodes then there will be _____ links.</li> <li>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.</li> <li>A _____ device will convert an analog signal to a digital signal.</li> <li>_____ is the collection of all the component frequencies.</li> </ol>	<p>Marks 14 CLO 1</p>
Q2.	(a)	<ol style="list-style-type: none"> <li>How are frames different from packets? Explain with examples.</li> <li>A phone line being analog can we send digital data on phone lines? Support your answer with examples.</li> <li>Give some details about fault tolerance, which network topologies have fault tolerance capability?</li> <li>How is logical addressing different from physical addressing? Support your answer with examples.</li> <li>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?</li> </ol>	<p>Marks 10 CLO 1</p>
Q3.	(a)	<p>Consider the following network, how many hops will it require for data to reach from node A to node J.</p> <pre> graph LR     A[End system A] --- B[Intermediate system B]     B --- C[Intermediate system C]     B --- E[Intermediate system E]     B --- I[Intermediate system I]     C --- D[End system D]     E --- F[End system F]     I --- G[Intermediate system G]     G --- H[End system H]   </pre>	<p>Marks 04 CLO 1</p>
	(b)	<p>A Sine wave has a frequency of 135 Hz. What is its period?</p>	<p>Marks 02 CLO 1</p>

Question No: 1

Part (a) Fill in the blanks

(1) Ring Topology has Unidirectional Movement of Traffic -

Ans: Ring Topology.

(2) Set of Rules that govern Communication is called Protocol -

Ans: Protocol.

(3) Reliability of a network is the frequency of failure and network recovery time after a failure is Measured -

Ans: Reliability.

(4) ASK, PSK, FSK and QAM are all of Examples of Digital To Analog Modulation

Ans: Digital To Analog.

(5) Data Synchronization is a function related with Physical layer.

Ans: Physical.

(6) The Physical layer changes bits into electromagnetic signals.

Ans: Physical.

(7) The information to be communicated in a network is called the Message.

Ans: Message.

(8) Mesh Topology requires the maximum number of I/O ports.

Ans: Mesh.

(9) A signal that repeats itself is a periodic signal.

Ans: periodic.

(10) A 56K Modem can download at a rate of 56.6 Kbps and upload at a rate of 33.61 Kbps.

Ans: 56.6, 33.61.

(11) In Mesh Topology, if there are five nodes then there will be 10 links.

Ans: 10.

3)

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(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 Transport layer.

Ans: Transport.

(13) A ADC device will convert an analog signal to a digital signal.

Ans: ADC  $\Rightarrow$  Analog to Digital Converter.

(14) Frequency is the collection of all the component frequencies -

Ans: Frequency Spectrum.



## Question No: 2

## Part (a)

(1) How are frames different from packets? Explain with Examples:

Ans: **Frames:** An Information Unit whose source and destination are data link layer entities.

**Packets:** An Information Unit whose source and destination are network layer entities -

Composed of the network layer header (Trailer) and upper-layer data -

**Difference:** The major difference between frame and packet is that frame is the serial collection of bits, and it encapsulates packets whereas packets are the fragmented form of data and it encapsulates segment

Basis for comparison

Frame

Packet

(1) Basic

Frame is the data link layer protocol data unit

packet is the network layer protocol data unit.

(2) Associated

Data link

Network

(3) OSI layer

layer

layer.

(5)

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2. A phone lines being analog Can we send digital data on phone lines? Support your Answer with examples.

Ans: Computer Transmit digital data in Term of Electrical Impulses. and phone Transmit in term of voice freq. Analog signal. To Transmit Digital data the Sender modem must be modulate or encode Computer digital data to analog data for Transmission via phone - There is limit to the Amount of Information a common analog telephone line can hold which is 56.Kbps.

Example: Digital Telephone send high speed Data over phone lines New communication system are overwidedly digital, analog is slowly on its way out. Therefore local Telephone companies may offer some digital series you can recommend to your customer -

(6)

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(3) Give some details about fault Tolerance, which network Topologies have fault tolerance Capability?

Ans: Mesh Topology:

A Mesh topology has multiple connections, making it the most fault tolerant Topology available. Every component of the network is connected directly to every other component - Characteristics of a Mesh Topology are as follows:

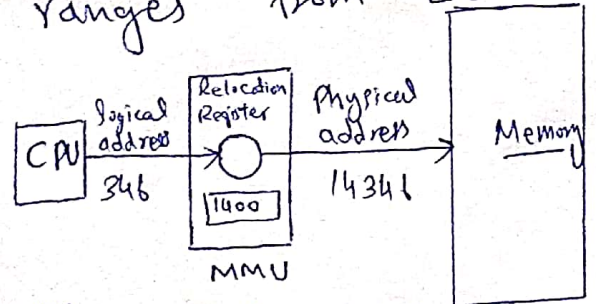
- (1) A Mesh topology provides redundant links across the network -
- (2) If a break occurs in a segment of cable, traffic can still be rerouted using the other cables -
- (3) It is common for partial mesh Topology to be deployed. This balances cost and the need for Redundancy -

(4) How is logical addressing different from physical addressing? Support your answer with Examples:

Ans: The basic difference between logical and physical address is that logical address is generated by CPU in perspective of a program where as the physical address is a location that exist in the Memory Unit.

**Logical address:**

The logical address is mapped to its correlating physical address by the Memory management Unit. Logical address usually ranges from zero to maximum -



**Physical Address:**

The physical address is not directly accessible or viewed by the user program hence a logical address needs to be mapped to it to make it accessible with the aid of pointers with revealed location but not the code -



## Q No. 2

Part : 5

Ans: If a local Telephone Company wants to connect the Lams in all of its offices through a city the will use bus topology - Because it is easy to set up and extend bus Network. Cable length required for this topology is the least compared to other networks.

Bus topology costs very low.



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Q No: 3

Part: (a) How Many hops will it Required ?

Ans: This system will Required Three (3) hops to Reach from node A to node j.

Part (B): A Sine wave has a frequency of 135 Hz. What is its period ?

Ans: Data: frequency = 135 Hz.  
T = ?

$$T = \frac{1}{f} \Rightarrow \frac{1}{135} \Rightarrow 0.00740$$

$$T = 7.4 \times 10^{-3} \text{ s} \Rightarrow \boxed{7.4 \text{ ms}}$$

