

**Department of Electrical Engineering**  
**Mid – Term Assignment Spring 2020**

**Date: 13/04/2020**

**Course Details**

**Course Title:** Computer Communication Network  
**Instructor:** \_\_\_\_\_

**Module:** 06  
**Total Marks:** 30

**Student Details**

**Name:** MUHAMMAD KAMRAN

**Student ID:** 13752

Q1.	(a)	<ol style="list-style-type: none"> <li>1. _____ topology has unidirectional movement of traffic.</li> <li>2. Set of rules that govern communication is called _____</li> <li>3. _____ of a network is the frequency of failure and network recovery time after a failure is measured.</li> <li>4. ASK, PSK, FSK and QAM are all examples of _____ modulation.</li> <li>5. Data synchronization is a function related with _____ layer.</li> <li>6. The _____ layer changes bits into electromagnetic signals.</li> <li>7. The information to be communicated in a network is called the _____.</li> <li>8. _____ topology requires the maximum number of I/O ports.</li> <li>9. A signal that repeats itself is a _____ signal.</li> <li>10. A 56k modem can download at a rate of _____ Kbps and upload at a rate of _____ Kbps.</li> <li>11. In mesh topology, if there are five nodes then there will be _____ links.</li> <li>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.</li> <li>13. A _____ device will convert an analog signal to a digital signal.</li> <li>14. _____ is the collection of all the component frequencies.</li> </ol>	Marks 14 CLO 1
Q2.	(a)	<ol style="list-style-type: none"> <li>1. How are frames different from packets? Explain with examples.</li> <li>2. A phone line being analog can we send digital data on phone lines? Support your answer with examples.</li> <li>3. Give some details about fault tolerance, which network topologies have fault tolerance capability?</li> <li>4. How is logical addressing different from physical addressing? Support your answer with examples.</li> <li>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?</li> </ol>	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. <div style="text-align: center; margin-top: 10px;"> </div>	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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SUBJECT : COMPUTER COMMUNICATION NETWORK

Attempt all the questions: ①

Q1:-

Fill in the blanks

- ① Ring topology has unidirectional movement of traffic.
- ② Set of rules that govern communication is called Protocol.
- ③ Reliability 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 Digital modulation.
- ⑤ Data synchronization is a function related with Session layer.
- ⑥ The Physical layer changes bits into electromagnetic signals.
- ⑦ The information to be communicated in a network is called the Message.
- ⑧ Mesh topology requires the maximum number of I/O ports.

- (9) A signal that repeats itself is called Periodic signal. <sup>(2)</sup>
- (10) A 56k modem can download at a rate of 56.6 kbps and upload at a rate of 33.6 kbps.
- (11) In mesh topology if there are five nodes then there will be 10 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 transport layer.
- (13) A ADC device will start convert an analogue signal to a digital signal.
- (14) Frequency spectrum is the collection of all component frequencies.

\* \* \* \* \*



Q2 (a)

How are frames different from packets?  
Explain with examples?

Frames:-

A frame can be defined as a data unit used in data link-layer. A frame consist of a markers which depict the start and end of the packets and address of sender.

Source and destination of frame in MAC address. It contains logical information.

Packet:-

A packet is a protocol data unit used in the network layer. Its to deliver a packet from one logical address to other.

Source and destination in Ip address packet is encapsulated with in a frame.

Examples:-

Frame:

Ethernet Frames point to point protocol from fiber channel from: v.42 modem fram.

Packet:-

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Network packets IP packets,  
Control packets

\* \* \* \* \*

Q2 (b)

A phone line being analogue, can we send digital data on phone lines? Support your answer with example.

Ans - To transmit digital data the sending modem must first modulate or encode, a computer digital signal into an analogue signal that can travel over the phone lines.

The receiving modem must then demodulate, or decode the analogue signal back into a digital recognizable to a computer.

Example:- You can get a phone service for your home or business with either analogue phone or digital phone the two services use different technologies and methods to carry and deliver voice signal.

\* \* \* \* \*



Q2 (c)

⑤

Give some details about fault tolerance. which network topologies have fault tolerance capability?

Fault tolerance:-

Fault tolerance is the property that enables a system to continue operating properly in the event of failure of (one or more faults within) some of its components.

Explanation:- If its operating quality decreases at all, the decrease is proportional to the severity of failure, as compared to a naively design system, in which even a small failure can cause total breakdown.

Fault tolerance is particularly sought after in high availability or life critical system.

The topology have fault tolerance capability:- Mesh topology have multiple connection making it the most fault tolerance topology available.

Every component of network is connected directly to every other component

\* \* \* \* \*

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Q2 (D) How is logical addressing different from physical addressing. Support your answer with example.

The logical address is virtual address and can be received by the user. The fundamental difference between logical and physical address is that logical address is generated by CPU during a programme execution whereas the physical address refers to a location in the memory unit.

The user can use the logical address to access the physical address whereas the user can indirectly access the physical address but not directly.

Q2 E A local telephone company wants to connect the LANs in all its offices through a city. For this case which network category would be used.

Ans. A metropolitan area Network (MAN) is a computer resources in a geographic region of size of a metropolitan area.

The term Man is applied to the interconnection of local area networks (LANs) in a city into a single



larger network which may then also offer efficient connection to a wide area network

The term is used to describe the interconnection of several area local area network in a metropolitan area through the use of points to point connection between them.

\* \* \* \* \*

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

Ans: (a) There are three hops required for data to reach from node (A) to node (J)  
One hop between (A) and (B)  
one hop between (B) and (I)  
And one hop between (I) and (J)

Q3 (b) A sine wave has a frequency of 135 Hz what is its period.

Ans (b)  
 $F = 135 \text{ Hz}$   
period = ?  
 $T = \frac{1}{F}$   
 $\Rightarrow \frac{1}{135}$   
 $= 0.0074 \text{ Sec}$