

Department of Electrical Engineering
Mid – Term Assignment Spring 2020
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Course Details

Course Title: Computer Communication Network **Module:** 06
Instructor: ENG. MUHAMMAD WAQAS **Total Marks:** 30

Student Details

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Q1.	(a) <ol style="list-style-type: none"> 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) <ol style="list-style-type: none"> 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. <div style="text-align: center; margin: 10px 0;"> </div>	Marks 04 CLO 1
	(b) A Sine wave has a frequency of 135 Hz. What is its period?	Marks 02 CLO 1

Q No 1 Part (A)

- 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 example of Digital Modulation.
- 5) Data Synchronization is a function related with Physical layer.
- 6) The Physical layer changes bits into electromagnetic signals.

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

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

9) A signal that repeats itself is a Periodic signal.

10) A 56K modem can download at a rate of 56.6 kbps and upload at a rate 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 ~~will convert~~ to device B using internet model,

The header from A's layer 4 is read by B's Transport layer.

13) A Dc (Analog to Digital Converter) device will convert an analog signal to a digital signal.

14) Frequency Spectrum is the collection of all the component frequencies.

Q No 2 Part A)

1) How are frames different from Packet? Explain with Examples.

Ans:

The difference between frame and packets is that frame is the serial collection of bits, and it encapsulates packets where as packets are the fragmented

from of data and encapsulates Segment. Data link layer performs framing process. on the other hand, network layer performs fragmentation of the data create smaller chunks known as packets.

Another major difference is that a frame includes MAC Address while a packet includes IP Address.

2) A phone line being analog can we send digital on phone lines? Support your answer with examples.

Ans:

it is possible to send data across PSTN network. while the call is in progress, I want to send some data through

The telephone line (as DTMF tones be send). The data that I want to send is digital and is encrypted and modulated on an analog carrier (so that it can be send over an analog wire). I have also see my broadband working in parallel when the call is going on.

I would guess PSTN work the same way throughout the world.

3) Give some details about fault tolerance, which network topologies have fault tolerance capability?

Ans).

Fault tolerance is the property that enables a system to continue operating properly in the event of

The failure of (or one or more fault within) some of its components.

The ability of maintaining functionality when portions of a system break down is referred to as graceful degradation.

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.

4) How is logical addressing different from Physical Addressing? Support your answer with Examples.

Ans)

Physical Address identifies a Physical location of required data in memory. The user never directly deals with the Physical address but can access by its corresponding logical Address. The user program generate the logical address and thinks that program is running in this logical address but program need Physical memory for its execution, therefore the logical address must be mapped to physical address by MMU before they are used. The term physical address space is used for all physical address cross pointing to logical addresses in a logical address space.

Logical Address is generated by CPU while Program is running.

The logical address is Virtual address. This address is used as a reference to access the physical memory location by CPU. The term logical address space is used for the set of all logical address generated by Program Perspective.

5) A local telephone Company want to connect Th LANs in all its offices Throughout a city. For This case which network Category would be used.

Ans) A local telephone network (LAN) connected in all offices Throughout the city is the Examples of Circuit-switched.

Qno 3 part (A)

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

Ans.:

As the figure below shows, we need a source-to-destination delivery. The network layer at A sends the packet to the network layer at B. When the packet arrives at router B, the router makes a decision based on the final destination J of the packet. Thus in the given figure there are three hops will be required for data to reach from node A to node J.

Part (b).

A Sin wave has a frequency of 135 Hz. what is period?

Sol:

$$f = 135 \text{ Hz}$$

Required:-

$$T = ?$$

$$T = \frac{1}{f}$$

$$= \frac{1}{135}$$

$$T = 0.00740 \text{ sec}$$

Ans