

Department of Electrical Engineering
Mid – Term Assignment Spring 2020
Date: 13/04/2020

Course Details

Course Title: Computer Communication Network **Module:** 06
Instructor: _____ **Total Marks:** 30

Student Details

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13746

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)	<p>Consider the following network, how many hops will it require for data to reach from node A to node J.</p>	Marks 04 CLO 1
	(b)	A Sine wave has a frequency of 135 Hz. What is its period?	Marks 02 CLO 1

1)
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Paper: CCN

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Objectives

(9)

1) Ring ii) Protocol iii) Reliability iv) Digital

v) Physical layer (vi) Physical (vii) Message (viii) Mesh

vix) Periodic (x) 56.6, 33.6 (xi) 10 (xii) Transport layer

xiii) ADC (Analog to Digital converter) (xiv) frequency

Spectrum.

Q2 (a)

i)

How are frames different from packets?
Explain with examples:

ANS:

• Frame:

- An information unit whose source and destination are data link layer entities
- Composed of Data link layer header and upper layer header

Frame

Data Link layer header	Upper layer Data	Data Link Layer Trailer
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• Packet:

- An information unit whose source and destination are network layer entities
- Composed of The network layer header (+ trailer) and upper-layer data

Packet:

Network layer header	Upper layer Data	Data Link Layer Trailer
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Multi connections making it the most fault tolerant topology available.

(3)

for Example: an enormous file is broken in to many packets and then transmitted across the network one at a time. The network hardware conveys the packet to the certain destination, where a software reassembles them into a single file again.

4) How is logical addressing different from physical addressing support your answer with example.

ANS:

Logical

→ it is the virtual address generated by CPU

→ set of all logical addresses generated by CPU in reference to a program is referred as logical

→ The user can view the logical address of a program.

Physical:

→ The location in a memory unit

→ Mapped to the corresponding logical addresses is as physical addresses.

→ The user can never view physical address of program.

ANS:

(3)

Fault tolerance:

1) Fault tolerance is a quality of a computer system that gracefully handles the failure of component hardware or software.

A system can be described as fault tolerant if it continues to operate satisfactorily in the presence of one or more system failure conditions.

Fault tolerance can be achieved by anticipating failures and incorporating preventative measures in the system design. Below are some examples of techniques to mitigate and tolerate failure in computer systems.

' Mesh network topology has multiple connections making it the most fault tolerant topology available.

Every component of the network is connected directly to every other component.

Multi connections making it the most fault tolerant topology available.

(8)

(2)

ANS:

Computers Transmit digital data expressed as electrical Impuls where as phones Transmit Voice frequencies as only Signals to Transmit digital Data The Sending modem must first Modulate or encode, a Computer's digital signal in to an analoge signal that can ~~over~~ travel over the phone line

Example: Digital Telephony Sending High-Speed Data over phone lines. New communication Systems are overwhelmingly digital, analoge is slowly on its way out There fore local Telephone companies may offer some as all of these digital services you can recommend to your customers.

(6)

Q(5) A local Telephone company wants to connect the LAN's in all its office through a city for this case which network?

ANS: local Telephone company wants to connect the LAN's in all offices in the city for this case the "Ring network" category would be used.

Q3
(a)

ANS Three hops will be required for data to reach from node A to node j

(b)

Data:

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

$$T = ?$$

Soll:

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

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

$$T = 0.0074 \text{ Sec.}$$