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

Course Details

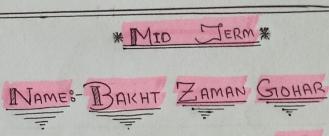**Course Title:** Computer Communication Network   **Module:** 06
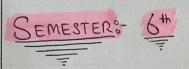
Instructor: Sir Waqas   **Total Marks:** 30
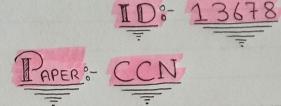
Student Details

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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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SEMESTER:- 6th

PAPER:- CCN

-: Objectives :-

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 & network recovery time after a failure is measured.

4. ASK, PSK, FSK & QAM are all examples 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 message.

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

9. A signal that repeat itself is Periodic signal.

10. A 56K modem can download at a rate of 56.6 Kbps & 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 B device using internet model, the header from A's layer 4 is read by B's **Transport** layer.

13. A **ADC** device will convert an analog signal to digital signal.

14. **Frequency spectrum** is the collection of all the component frequencies.

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Q2:- (Part-a):-

1. How are frames different from packets? Explain it with examples.

★ FRAMES:-

- is defined as; a data unit used in data link layer

Includes:- • Source and destination MAC address.

Correlation:- • Segment is encapsulated within a packet.

Associated • Data link layer

OSI layer

★ Example:-

A particular example of a frame is the Ethernet frame. Ethernet frames format contain the physical source as well as the destination MAC address of the device. These frames are of varying length no frame lesser than 64 octects or > 1518 octects.

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⭐ PACKETS:-

- is defined as; the protocol data unit used in the network layer.

Includes:-
Correlation
Associated
OSI layer

- Source and destination IP address
- Packet is incapsulated within a frame.
- Network layer

⭐ Example:-

An enormous file is broken into many packets and then transmitted across the network one at a time. The network conveys the packet to the certain destination, where a software regathers them into a single file again.

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

Ans:- Phone lines can send analog signal only to the recieving end but we can send the digital data as well on phone lines by simply converting digital signal into analog signal.

⭐ Example:-

Modem. With the help of modem we can convert the digital signal to analog signal so that it can be send on the telephone lines that carry only analog signal.

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3. Give some details about fault tolerance, which network topologies have fault tolerance quality?

* Fault Tolerance:-

Fault tolerance is a quality of a systeme that gracefully handles the failure of component hardware or software.

Fault tolerance is the property that enables a system to continue operating properly in the event of the failure of some of its components. A system can be described as fault tolerant if it continues to operate satisfactorily in the presence of one or more system failure condition.

* 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.

So mesh topology is that network topology which have fault tolerance capability.

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4. How is logical addressing different from physical addressing? Support your answer with examples.

* Logical Adress:-

• Logical adress is generated by CPU.

• Logical adress space is the set of all ~~physical~~ logical adresses generated by CPU of a program.

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- The logical adress does not exist physically in memory
- The user can use the logical adress to access the physical adress.
- Logical adress is erased when the system is rebooted.

Example:-

The example of logical adress is the IP adress that is provided by your Internet service provider (ISP)

Physical Adress:-

- Physical adress is a location in a memory unit.
- Physical address space is the set of all physical address mapped to corresponding logical addresses
- The physical address is a location in the memory unit that can be accessed physically.
- The user cannot directly access physical address.
- Physical address is not affected when the system is reebooted.

Example:-

The physical address is the MAC address. MAC address is provided by vendor of the network interface card (NIC) the card which is used to connect your machine to the internet.

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?

Ans:- LAN or local area networks connects network devices in such a way that personal computers & workstations can share data, tools & program.

To connect LANs in all its offices throughout a city the network used is WAN wide area Networks. WAN is a computer network that extends over a large geographical area, although it might be confined within the bounds of a state or country.

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Q3:- (Part-a)

Ans:- According to the sketch given in question we need only two hops for data to reach from node A to node J.

- 1st hop is required at point B which send send data to point I.
- And 2nd hop is required at point I which send the data from I to J.

So, in this system two hops will required for data to reach from node A to J

Q3:- (Part-b)

★ **Solution:-** we have formula $T = \frac{1}{f}$

So, $f = 135Hz$ the $T = \frac{1}{135} = 0.0074\,sec$

So, Period $= 0.0074\,sec$

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