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

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

Student Details

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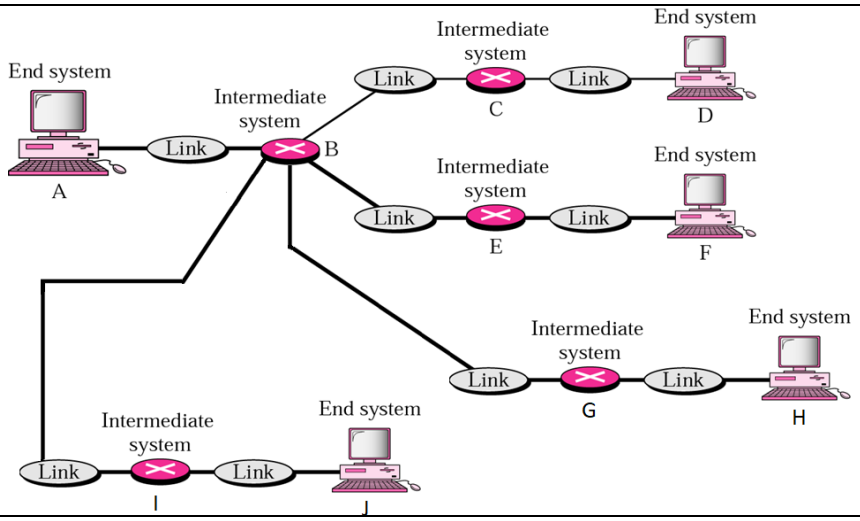
Q1.	(a)	1. _____ topology has unidirectional movement of traffic. 2. Set of rules that govern communication is called _____ 3. _____ of a network is the frequency of failure and network recovery time after a failure is measured. 4. ASK, PSK, FSK and QAM are all examples of _____ modulation. 5. Data synchronization 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

Q 1 (a) :- ?

Ans (a) :- (1) Ring Topology.

(2) Protocol.

(3) Reliability.

(4) Digital.

(5) Session layer or Physical.

(6) Physical layer.

(7) Message.

(8) Mesh topology.

(9) Periodic signal.

(10) 56.6 ; 33.6.

(11) 10 links.

(12) Transport.

(13) ADC (Analog to Digital converter).

(14) Frequency spectrum.

Q 2 (1) How are frames different from Packets? Explain with example.

Ans:-

Basic for comparison	FRAME	PACKET
Unit	Frames are the unit of the data in the link layer.	Packet are the unit of data in the link layer.
Associated osi layer	Data link Layer.	Network Layer.
Includes	Sources and destination mac address	Sources and destination IP address.
Correlation	Segmented is encapsulated with in packet.	Packet is encapsulated with a frame.
Examples	In time-division multiplexing (TDM), a frame is a complete cycle of events within the time division period.	An enormous file is broken into many packets and then transmitted across the network one at a time. The network hardware convers the pocket to the certain destination, where a software re-gathers them into a single file again.

Q12) Part(2) A Phone line being analog can we send digital data on Phone lines? with example.

Ans:- Normally, we cannot send digital data on the Phones line but with the help of modem we can send it. Computer transmite digital data, expressed as electrical impulses, whereas telephones transmit voice frequencies as analog signals.

→ So, modems act as a kind of interpreter between a computer and the telephone line through which we can send digital data.

→ To transmit digital data, the sending modem must five modulate, or encode, a computer's digital signal into an analog signal that can travel over the Phone line. The receiving modem must then demodulate, or decode, the analog signal back into a digital signal recognizable to a computer. A modem transmits data in bits Per second (bps).

Q21 Part 3:-

Ans:- Fault tolerance is a quality of a computer system or network that gracefully handle the failure of components hardware or software. A system can be describe as fault tolerant if it continuous to operate satisfactorily in the presence of one or more

→ system failure condition.
Fault tolerance can be achieved by anticipating failures and incorporating preventative measures in the system design.

→ 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.

Characteristic :-

* A mesh topology provides redundant links across the network.
* If a break occurs in a segment of cable, traffic can still be rerouted using the other cables.
* This topology is rarely used because of the significant cost and work involved in having network components directly connected to every other component.
* It is common for partial mesh topologies to be deployed. This balances cost and the need for redundancy.

Q → Part (4) :-

Ans :-

The fundamental difference between logical and physical address is that logical address is generated by CPU during a program execution whereas, the physical address refers to a location in the memory unit.

There are some other difference between the logical and physical address. Let us discuss them with the help of comparison:-

Basic for comparison	Logical Address	Physical Address
Basic	It is the virtual address generated by CPU	The physical address is a location in a memory unit.
Address space	set of the all logical address generated by CPU in reference to a program is refered as logical address space.	set of the all physical address mapped to the corresponding logical address is referred as physical address.
Visibility	The user can view the logical address of a program.	The user can never view physical address of a program.
Access	The user uses the logical address to access the physical address.	The user can not directly access physical address.
Generation	The logical address is generated by the CPU.	The physical address is computed by MMU.

* Example of logical address:- A logical address is the address at which an item (memory cell, storage element, network host) appears to reside from the perspective of an executing application program.

* Example of physical address:- The physical address that is physically or geographically located in one state of the US, but the mailing address has it listed as being in another. Physical Address: 2577 CoRd 103.

Q2 part (5)

Ans:- We can connect the LANs in all its offices throughout a city through WAN (wide area Network) Because WAN connects different smaller networks; including local area networks (LANs) and metro area networks (MANs).

This ensures that computer and users in one location can communicate with computer and users in other locations. WAN implementation can be done either with the help of the Public transmission system or a private network.

Q 3 Part (a)

Ans:- 3 hops will required for data to reach from A to j.

1 from End-system A to router B.

2 from router B to router 1.

3 from router 1 to end system to router 1.

Q 3 Part (b) A Sine wave has a frequency of 135 Hz. what is its period?

Ans:- Given data:

$f = 135\ Hz$

Find $T = ?$

Putting formula

$$T = 1/f$$

$$T = 1/135\ Hz$$

$T = 0.0074$ second