

# Department of Electrical Engineering

## Mid – Term Assignment Spring 2020

Date: 13/04/2020

### Course Details

**Course Title:** Computer Communication Network  
**Instructor:** Sir Muhammad Waqas

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

### Student Details

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Q1.	(a)	<ol style="list-style-type: none"> <li>1. <u>Ring</u> topology has unidirectional movement of traffic.</li> <li>2. Set of rules that govern communication is called <u>protocol</u></li> <li>3. <u>Reliability</u> 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 <u>digital</u> modulation.</li> <li>5. Data synchronization is a function related with <u>data link</u> layer.</li> <li>6. The <u>physical</u> layer changes bits into electromagnetic signals.</li> <li>7. The information to be communicated in a network is called the <u>message</u>.</li> <li>8. <u>Mesh</u> Topology requires the maximum number of I/O ports.</li> <li>9. A signal that repeats itself is a <u>periodic</u> signal.</li> <li>10. A 56k modem can download at a rate of <u>56.6</u> Kbps and upload at a rate of <u>33.6</u> Kbps.</li> <li>11. In mesh topology, if there are five nodes then there will be <u>10</u> 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 <u>transport</u> layer.</li> <li>13. A <u>modem</u> device will convert an analog signal to a digital signal.</li> <li>14. <u>Frequency spectrum</u> is the collection of all the component frequencies.</li> </ol>	<p>Marks 14 CLO 1</p>
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>	<p>Marks 10 CLO 1</p>
Q3.	(a)	<p>Consider the following network, how many hops will it require for data to reach from node A to node J.</p> <pre> graph LR     A[End system A] --- Link1[Link] --- B[Intermediate system B]     B --- Link2[Link] --- C[Intermediate system C]     B --- Link3[Link] --- E[Intermediate system E]     B --- Link4[Link] --- I[Intermediate system I]     C --- Link5[Link] --- D[End system D]     E --- Link6[Link] --- F[End system F]     I --- Link7[Link] --- J[End system J]     </pre>	<p>Marks 04 CLO 1</p>
	(b)	A Sine wave has a frequency of 135 Hz. What is its period?	<p>Marks 02 CLO 1</p>

Q No 2

Part a) How are frames different from packets?  
Explain with examples.

Ans:- The main difference between frame and packets is that the frame is the serial collection of bits and the frames are units of data in the link layer and it performs framing process. Whereas packets are units of data in the network layer and it performs the fragmentation of the data and create smaller chunks known as packets.

e.g Framing includes the source and the destination MAC addresses. and in packets includes the source and destination IP addresses.

2) :- A phone line being ~~an~~ analog can we send digital data on phone lines?  
support your answer with examples.

Ans:- Yes we can send digital data on phone lines because phone lines always carry digital data by converting Analog data into digital data through medium.

3: Give some details about fault tolerance which network topologies have fault tolerance capabilities.

Ans:- Fault tolerance is the property that enables a system to continue operating properly in the event of the failure of some of its components. If its operating quality decreases at all the decrease is proportional to the severity of the failure as compare to naïvely designed system in which even a small failure can cause total breakdown. A Mesh topology has multiple connections making it the most fault tolerant topology.

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

Ans:- The basic difference between logical addressing and physical addressing is that logical address is generated by CPU and used a reference to locate whenever we executed the program and physical address is location that exists in the memory it allows accessing a particular storage cell in the memory it used in both hardware and software for accessing data.

5:- A local telephone company want to connect the LANs in all its offices throughout a city for this case which network category would be used?

Ans:-

In this case we use WAN (wide Area network) because a system of LANs connected in this way is called WAN it spans a relatively large geographical area

QNO 3

a) Consider the following network how many hops will it requires for data to reach from node A to node J.

Ans:- There are three hops will require for data to reach from A to J

b) A sin wave has a frequency of 135 Hz. What is its period?

Sol:- As we know that

$$T = \frac{1}{f} = \frac{1}{135} = 7.40 \text{ ms}$$

So The period is  
 $T = 7.40 \text{ ms}$