CT — 03
Name: Nandon kumare Pal
ID: IT—18022

S—1.

   a) what is physical layer ?   3

   b) Describe about Transmission
      Impairment.   5

   c) what is Transmission media and
      Channel capacity ? Describe those.   6

S—2.

      a) what is multiplexing ?   3

      b) what is Unie-polar Encoding ?   3

      c) Describe Analog - to Digital
         converesion.
                                                        4

      d) How many types Transmission
         model. Describe it.   4

Q-3.

    a) What is Band pass and Low-pass?   9

    b) Describe - Digital-to-Analog

       Conversion.   6

    c) What is Phase modulation? describe

       it.   9

Q-4.

    a) What is Twisted Pair Cable? Describe

       it.   5

    b) Describe Coaxial Cable.   5

    c) What is Fiber Optics.   9

Q-5.

a) What is Radio Transmission?
Describe it.   6

b) Describe microwave and infrared
transmission.   6

c) What is light transmission? 2

Q-6.

a) What is Code Division Multiplexing?
Describe it.   6

b) What is circuit and message
switching?   6

c) What is packet switching? 2

Q-7.

a) What is transport layer? 9

b) What is end-to-end communication? 6

c) What is Bandwidth Management? 9

Q-8.

a) Write down the features of TCP. 7

b) What is connection mang management? 2

c) Write the features of UDP. 5

1 No Ans:

a) Physical layer: It is the OSI model plays the role of interacting with actual hardware and signaling mechanism. This layer defines the hardware equipment, cabling wiring pulse used binary signal.

b) Transmission Impairment: When signals travel through the medium thy tend to deteriorate. This may have many reasons

i) Attenuation: For the receiver to interpret the data accurately.

ii) Despersion: As signal travels through the media, it tends to spread and overclaps.

iii) Noise: Random disturbance or fluctuation in analog or digital signal.

a) Channel Capacity: The speed of transmission of information is said to be channel capacity. We count

it as date rate in digital word. It depends on numerous factor such as:

i) Bandwidth: The physical limitation of underlying media.

ii) Error-rate: Incorrect reception of information because of noise.

iii) Encoding: The number of level used for signaling.

2 No Ans:

a) **Multiplexing:** It is a technique to mix and send multiple data streams over a single medium. This technique requires system hardware called multiplexer. Information from the medium and distributes to different destinations.

b) **Uni-polar ~~Enf~~ Encoding:** Unipolar encoding schemes use single voltage level to represent data. In this

used to represent binary 1.

It is also called Unipolar - Non return zero. Because there is no current condition of either represents 1 or 0.

3. Analog to Digital Conversion:

Microphones create analog voice and cameras creates analog videos which are treated as analog data. Analog is a continuous stream of data in the

wave from whereas digital data is discrete. To convert a analog wave into digital data we use pulse code Modulation (PCM).

PCM is one of the most commonly used method to convert analog data into digital form. It involves three steps.

i) Sampling.

ii) Quantization.

iii) Encoding.

3 No Ans:

a) Bandpass: The filteres are used to filter and passes low frequency signals. A bandpass is a band of frequencies which can pass the filter.

Low pass: Low-pass is filter that passes low frequency signals. When a digital data converted into a bandpass analog signal is called analog to analog conversion.

b) Digital to Aanlog Conversion: when a data from one computer is sent to another via some analog carrier it is first converted into analog signal. Analog signal is characterized by its amplitude, frequency and phase. There are three kinds of digital to analog conversion.

Amplitude shift keying: In data conversion technique the amplitude of analog signal is modified to reflect binary data.

c) __Frequency Modulation:__ In this modulation technique, the frequency of the signal is modified in the voltage level of moduling signal.

Analog data

carrier wave

frequency modulation
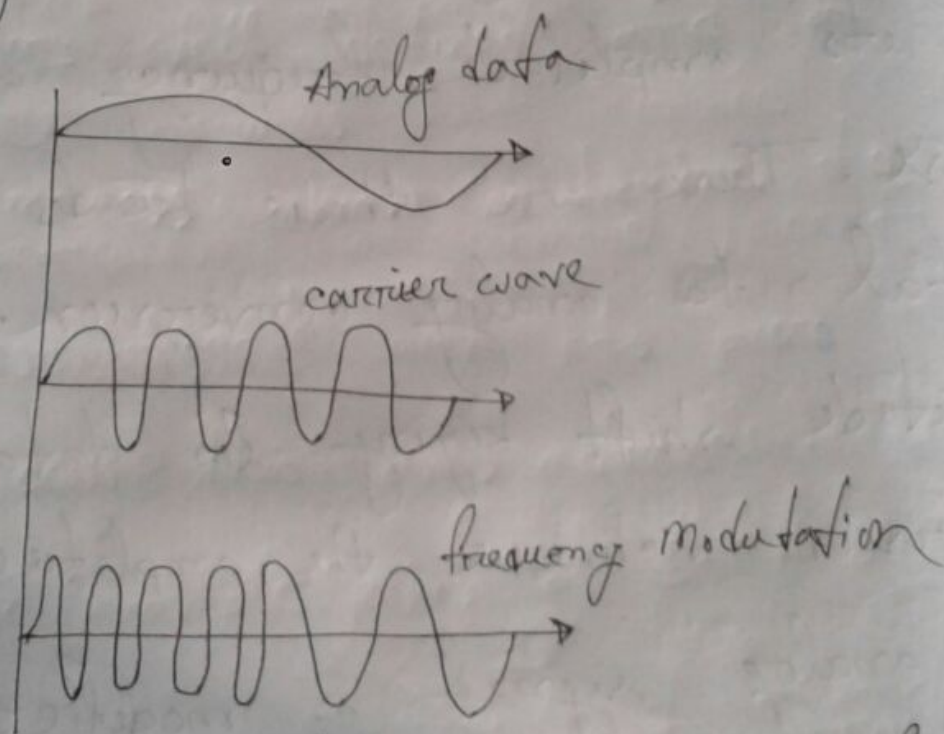
The amplitude and phase of the carrier signal are not altered.

$\boxed{\text{9 No Ans:}}$

a) Data communication: Data communication referes to the transmission of this digital data between two or more computers. A computer network is a telecommunication network that allows computers to exchange data.

i) Network Basic understanding: A system of interconnected computers and such as printers is called computer network.

b) Application of communication and computer network:

i) Resource sharing such as printers and storage devices.

ii) Exchange of information by means of e-mail and FTP.

iii) Information sharing by using web or internet.

iv) video conferences.

v) Parallel computing.

vi) Instant messaging.

c) Computer network: A system of interconnected computers such a printers is called computer network.

Type of computer network:

1) Geographical span: It may be spanned across your table, among bluetooth enabled devices ranging not more than few meters. It may be spanned across a whole city. It may be one network covering whole world.

ii) Inter connectivity: components of a network can be connected to each other differently in some fashion. Every single dvic can be connected to every oth device on network making the network mesh.

iii) Administration: From an adminis tration's point of view. a netwo can be private network which belongs a single autonomous system.

iv) Network Architecture: There can be one or more system acting as server.

5 No Ans:

a) DCN: DCN means dynamic circuit network. DCN is Advanced computer networking technology that combines packet - switched communication based on the internet. Protocol as used in the internet with circuit-switched.

b) Different type of computer Network:

i) Personal area network.

ii) Local Area Network.

iii) Metropolitan Area Network.

iv) Wide Area Network.

c) The internet grow growth has become explosive and it seems impossible to escape the bombardment of www. com's seen constantly on television, heard of radio and seen in magazines. Because the internet has become such a large of our lives a good under understanding is needed to use this new tool most effecti

This whitepaper explains the underlying infrab infrastructure and technologie that make the internet work. It does not go into great depth, but covers enough of each area area to give basic understanding of the concept involved.

6 No Ans.

a) The lan technologies will assist the device on the network comere communicate with each other. These LAN technologies is special combinations of software and hardware which makes the network perform at a specific speed and in the certain way. There are four types of frames.

10 Bare T: It is one among several adaptations of standard Ethernet for the local LAN's. This 10 Bare is also known as twisted pair ethernet. This cable more flexible and thinner when compared to the coaxial cable.

<u>100 Base T</u> : It functions at a rate

100 mbps speed. It is also known as
fast Ethernet. This implies that the
designation referes to both the
fibere and copper based ethernet
version. 100 Base T based on the
CD LAN method.

<u>1000 Base T</u> : It is a cheaper version
of the Gigabit ethernet, which is
used the is IEEE 802.3ab standard
It uses a pairs of category 5
unshielded twisted pairs to
accomplish the Gigabit data
reate.

7 No Ans:

a) Transport Layer: Transport layer is the first offer peer-to peer and end to end connection between two processes on remote host. Transport layer takes data from upper layer and then breaks into smaller size segments numbers each byte and hands over to lower layer for delering delivery.

b) End to End Communication: A process on one host identifies its peer host on remote network by means of TSAP also known as port number. TSAP are very well defined and a process which is trying to communicate with its peer known this in advance.

For example, when a ~~DHCH~~ DHCP a clients wants to communicate with remote server.

c) **Bandwidth Management:** TCP uses the concept of window size to accomodate the need of Bandwidth management. Window size tells the sender at the remote end, the number of data byte segments the receiver at this end can receive. TCP uses slow start phase by using window size.

For example the client uses window size 2 and sends 2 bytes of data. If an acknowledgement is missed data lost in transit network.

a) TCP Features:

i) TCP ensures that the data reaches intended destination in the same order it was sent.

ii) TCP is connection oriented. TCP requires that connection between two remote point established

iii) TCP provides error-checking and recovery mechanism.

iv) TCP provides end to end communication.

v) TCP operates in client server.

vi) TCP provides full duplex server. It can perform roles of both receiver and sender.

b) Features of UDP:

i) UB UDP is used when acknowledge of data does not hold any significance

ii) UDP is good protocol for data flowing in one direction.

iii) UDP is simple and suitable for query based communication.

iv) UDP is not connection oriented

v) UDP does not provide congestion control mechanism.

vi) UDP does not guarantee ordered · delivery of data.

vii) UDP is stateless.