Assignment :- 1

Q-1 Explain Transmission media. Explain types of guided media with its application, advantages and disadvantages.

Ans :-

- **Transmission media :-**

    Transmission media is a communication channel that carries the information from the sender to the receiver. Data is transmitted through the electromagnetic signals.

    → The main functionality of the transmission media is to carry the information in the form of bits through LAN.

    → it is Physical path between transmitter and receiver in data communication.

    → In a copper - based network, the bits in the form of electric signals.

    → In a fibre based network, the bits in the form of light pulses.

- **Types of Guided Media :-**

    (1). Twisted Pair cable
    (2). Coaxial cable
    (3). Fibre optic cable.

    Guided media, also known as wired or Bounded transmission media, is the Physical medium through which the signals are transmitted.

1. Twisted pair cable :-

Twisted - pair cables are cables consisting of two insulated conductor wires wound and twisted together, arranged in a regular spiral pattern. One wire carries the signal to the receiver, and the other is used as a ground reference. The receivers use the difference between the two to interpret signals.

• Advantage :-

→ it are often want to carry both analog and digital data.

→ it's relativary easy to implement and terminate.

→ it cause interfaces themselves.

→ Best performance in short distances.

• Disadvantage :-

→ Attenuation is very high.

→ As they a thim so can be easily breakable.

→ Low durability.

→ it supports 10 mbps upto distance of 100.

2. Coaxial Cable :-

Coaxial cable, also known as coax, consists of an inner conductor surrounded by a concentric conducting shield. Coaxial cables were the first cable types used in LANs. The coaxial cable transmits protection in baseband mode and Broadband mode. cable TVs and analog television networks widely use coaxial cable.

Advantage :-

→ Supports high bandwidth levels.

→ Easy to install with simple tools.

→ can support multiple channels.

→ It is easy to write and easy to expand due to flexibility.

Disadvantage :-

→ It must be grounded to prevent interface.

→ It is bulky.

→ expensive to install for longer distance.

→ Have a multiple layers, making coaxial cable is bulky.

3. Fibre Optic Cable :-

A Fibre optic cable is a cable that uses electric signals for communication. A fibre optic is a cable that holds the optical fibers coated in plastic used to send the data by light pulses. The plastic coating protects the optical fibers from heat, cold and electromagnetic interfaces from other types of wiring.

Advantage :-

→ Fibre optic cable offers high - speed transmission.

→ They are resistant to corrosive materials.

→ They are lighter in weight and cannot be tapped easily.

→ immune to EMI or eavesdropping.

Disadvantage :-

→ very expensive cable fiber.

→ More complex to install.

→ high precision required for connections.

→ They are fragile compared to standard cables.

2. Explain Internet Transport Protocols in detail.
Explain TCP with its features and services.
Discuss difference between FTP and UDP.

Ans :-

User Datagram Protocol (UDP) and the TCP are the basic transport -level protocols for making connections between internet hosts. Both TCP and UDP allow programs to send message to and receive message from application on other hosts.

- Transmission control Protocol :-

TCP stands for Transmission control Protocol. It is a transport layer Protocol that facilitates the transmission of Packets from source to destination. It is a connection - oriented Protocol that means it establisher the connection prior to the communication that occurs between the computing devices in a network. This Protocol is used with an IP Protocol so together, they are referred to as a TCP / IP.

- Features of TCP :-

→ Transmission control Protocol corresponds to the Transport layer of OSI Model.

→ TCP is a reliable and connection oriented protocol.

→ TCP offers connection oriented end -to-end Packet delivery.

→ it retransmits the bytes not acknowledged with in specified time period.

Services of TCP :-

→ TCP offers following services to the processes at the application layer :-

(1) Stream Delivery service
(2) Sending and Receiving Buffers
(3) Bytes and segments
(4) Full Duplex services
(5) Connection oriented services
(6) Reliable service.

→ TCP Protocol is stream oriented because it allows the sending process to send data as stream of bytes and the receiving process to obtain data as stream of bytes.

→ Transmitting the data in duplex mode means flow of data in both the directions at the same time.

→ it may not be possible for sending and receiving process to produce and obtain data at same speed, therefore, TCP needs buffers for storage at sending and receiving ends.

→ TCP Provides a process to process communication.

→ TCP Provides Reliability and connection -oriented service both at the same in the time.

• Difference Between FTP and UDP :-

FTP	UDP
(1) FTP is a reliable, connection-oriented Protocol	(1) UDP is a lightweight connectionless Protocol.
(2) FTP guarantees reliable data transfer and error checking.	(2) UDP does not reliable guarantee data transfer or error checking
(3) FTP stands for File Transfer Protocol.	(3) UDP stands for User Datagram Protocol.
(4) FTP establishes a connection before data transfer.	(4) UDP does not establish a connection before data transfer.
(5) FTP ensures ordered delivery of data packets	(5) UDP does not guarantee the order of delivery.

Q-3   Write case study of E-mail.

Ams :-
      case study emails are a type of marketing email that tells a specific success story about how a company or person used a particular product or service to solve a problem or achieve a goal.

→ They typically include measurable results and customer testimonials in addition to a brief overview of the circumstance, the difficulties encountered, and the solution implemented.

⟶ Because they provide real-world example of how a product or services can address specific pain points, case study

emails are effective at establishing credibility and trust with potential customers.

→ Additionary, they demonstrate industry expertise and the capacity to produce measurable outcomes.

→ when crafting an email for a case study it's critical to emphasize the customer's experiences and clearly communicate the Solutions advantages.

→ The success story can also be more effectively communicated by including relevant visuals like graphs and charts.

Elements of case study email :-

1. Keep it concise :-

your email should be short and to the point. Include a brief introduction that explains what the case study is about

2. Attention headline :-

The headline of your case study should be attention and highlight the main benefit or outcome achieved by your customers.

3. Customer -centric email :-

The case study should be about the customer not your product or services.

4. Use Visual :-

Include images or graphics to break up the text and make the case study more engaging.

5. Easy to read :-

Use short paragraphs, subheadings and bullet points to make the case study to scan and read quickly.

6. Include CTA :-

The end of your case study email should include a clear call to action, or an invitation to schedule a demo.

7. Personalization :-

If possible, personalize the email by addressing the recipient by name and including relevant information about their business or industry.

8. Optimization :-

Test different subject lines, head times and content to see what resonates best with your audience. Use this data to optimize future case study emails.

Assignment :- 2

Q-1 Explain wireless ad - hoc and sensor network.

Ans :- The wireless ad hoc network is a type of local area network that is built spontaneously to enable two or more wireless devices to be connected to each other without requiring typical network infrastructure equipment, such as a wireless router or access point.

→ In most cases a PC, laptop or smart phone wi-Fi interface is used to build an ad hoc network.

→ In other situation, devices such as wireless sensors are designed to work primarily in an ad hoc mode.

→ Ad hoc networks are mostly wireless local area networks.

→ The devices communicate with each other directly instead of relying on a base station or access point as in wireless LANs for data transfer co-ordination.

→ Each device participates in routing activity, by determining the route using the routing algorithm and forwarding data to other devices via this route.

→ wireless ad hoc networks are distributed networks that do not require fixed infrastructures to work.

- Sensor Network :-

A sensor network consists of multiple detection stations called sensor nodes, each of which is small, lightweight and portable. Every sensor node is equipped with a transducer, microcomputer, transceiver and power source.

→ The transducer generates electrical signals based on sensed physical effects and phenomena of the network.

→ A sensor network is a group of sensors where each sensor monitors data in a different location and sends that data to a central location for storage, viewing and analysis.

→ There are many application for sensor network from monitoring a single home, to the surveillance of a large city, to earth quake detection for the whole world.

→ Sensor in network nodes cooperatively sense and control the environment.

→ They enable interaction between persons or computers and the surrounding environment.

→ The sensor network connects to the internet or computer networks to transfer data for analysis and use.

Q-2 Explain Internet and Internet architecture.

Ans:- The Internet is the global system of interconnected computer networks that uses the Internet protocol suite to communicate between networks and devices.

- Internet :-

Internet is a global network that connects billions of computers across the world with each other and to the world wide web.

→ It uses standard internet protocol suite to connect billions of computers users worldwide.

→ It is set up by using cables such as optical fibers and other wireless and networking technologies.

→ At present, internet is the fastest mean of sending or exchanging information and data between computers across the world.

→ It is belived that the internet was developed by " Defense Advanced Projects Agency " (DAPRA) department of the United States, And it was first connected in 1969.

→ As of 12 August 2016, there were more than 300 crores of internet across the world

- Internet Architecture :-

  Internet is defined as a private network of computers within an organization with its own servers and firewall. Every computer in an internet is identified by a unique IP address.

  → Internet is system in which multiple PCs are networked to be connected to each other.

  → PCs in internet are not available to the world outside of the internet.

  → Usually each company or organization has their own internet network and members / employees of that company can access the computers in their internet.

  → An internet is a restricted network accessible only to authorized users within the organization and is use to facilitate communication, collaboration and sharing among employees.

  → In the internet the cost of conveying data utilizing the internet is very low.

  → Using internet employees can easily get data anytime and anywhere.

  → it connects employees with each other.

Q-3 Explain OSI model in detail.

Ans :- OSI stands for open system InterConnection is a reference model that describes how information from a software application in one computer moves through a physical medium to the software application in another computer.

→ OSI consists of seven layers, and each layer performs a particular network function.

→ OSI model was developed by the International organization for Standardization in 1984 and it is now considered as an architectural model for the inter-computer communications.

→ OSI model divides the whole task into seven smaller and managebie tasks.

→ each layer is assigned a particular task.

→ each layer is self-contained, so that task assigned to each layer can be performed independently.

• characteristics of OSI model :-

The OSI model is divided into two layers :- upper layers and lower layers.

→ The upper layer of the OSI model mainly deals with the application related issues, and they are implemented only in the software.

→ The application layer is closest to the end user.

→ Both the end user and the application layer interact with the software application.

→ An upper layer refers to the layer just above another layer.

→ The lower layer of the OSI model deals with the data transport issues.

→ The data link layer and the physical layer are implemented in hardware and software.

→ The physical layer is the lowest layer of the OSI model and is closest to the physical medium.

→ The physical layer is mainly responsible for placing the information on the physical medium.

→ These are the seven OSI layers.

→ Each layer has different function. list of seven layers are given below.