Q1. What is socket? Explain different types of socket.

Ans. • Sockets are the end points of internet communication.

• Two processes can communicate if and only if both of them have a socket at their ends.

→ Types of sockets:-

1. Stream socket:

• This is designed for the connection oriented protocol such as TCP.

• The TCP uses a pair of stream sockets one each on either ends for connecting one application program to other across the Internet.

2. Datagram socket:

• This type of socket is designed for the connectionless protocol such as UDP.

• UDP uses a pair of datagram sockets for sending a message from one application program to another across the internet.

3. Raw socket:

• Raw sockets are designed for the the protocols like ICMP or OSPF, because these protocols do not use either stream packets or datagram sockets.

Q2. Differentiate between TCP and UDP.

Ans

	TCP	UDP
1.	Full featured protocol that allows applications to send data reliably without worrying about network layer issues.	1. Simple, high-speed, low-functionality wrapper that interfaces applications to the network layer.
2.	Connectionless: data is sent without setup.	2. Connection Oriented: Connection must be established prior to transmission.
3.	Overhead is low but higher than UDP.	3. Overhead is very low.
4.	Reliable delivery of messages; all data is acknowledged.	4. Unreliable, best-effort delivery without ~~acknowledgements~~ acknowledgements.
5.	Transmission speed is high but not as UDP.	5. Transmission speed is very ~~high~~ high.
6.	Error control: is provided ~~only checksum~~	6. Error control: only checksum.

Q3- Explain FTP protocol

Ans.: The file Transfer Protocol (FTP) is a standard network protocol used to transfer computer files

from one host to another host over a TCP based network, such as the Internet.

- FTP is built on client-server architecture and uses separate control and data connections between the client and the server.
- FTP ~~users~~ users may authenticate themselves using a clear-text sign-in protocol, normally in the form of a username and password, but can connect anonymously if the server is configured to allow it.
- For secure transmission that protects the username and password, and encrypts the content, FTP is often secured with SSL/TLS (FTPS).
- FTP may run in active or passive mode, which determines how the data connection is established.

Q4. Write down steps involved in establishing a socket on the client side and server side

Ans. The steps involved in establishing socket on the client side are as follows:-

1. Create a socket with the socket() system call.
2. Connect the socket to the address of the server using the connect() system call
3. Send and receive data. There are a number of ways to do this, but the simplest is to use ~~the~~ the read() and write() system calls.

→ Server side:-

1. Create a socket with the socket() system call
2. Bind the socket to an address using the bind()

system call. For a served socket on the Internet, an address consists of a port number on the host machine.

3. Listen for connections with the listen() system call.
4. Accept a connection with the accept() system call. This call typically blocks until a client connects with the server.
5. Send and receive data.