11.1 Computer network : Two or more computers connected through a communication media that allows exchange of information between computers is called a Computer Network. Eg: Internet

11.1.1 Need for network

The advantages of Networks are given below.

1) Resource sharing : All the computers in a network can share software (programs, data .....) and hardware (printer, scanner, CD drive etc.).
2) Reliability : If one computer fails, the other computer can perform the work without any delay. This is very important for banking, air traffic control and other application.
3) Price Vs Performance : A main frame computer can be 10 times faster than a PC but it costs thousand times a PC. Therefore instead of a main frame 10 personal computers are used with less cost and same performance.
4) Communication Medium : It is a powerful communication medium. We can exchange information between computers in a network.
5) Scalable : This means, System performance can be increased by adding computers to a network.

11.1.2 Terminologies

* Bandwidth : The maximum amount of data that can be transmitted by the medium measured in Hertz.
* Noise : It is the unwanted electrical or electromagnetic interferences that adversely affect the transmitted data signals.
* Node: A computer or an I/O device connected to a network is called Node.

11.2 Data communication system

Communication is the exchange of information between two human beings. But data communication is the exchange of information between two computers(devices).

Message: It is the data/information to be transmitted from one computer to another

Sender : It is a computer or a device that sends data. It is also called source or transmitter

Receiver : It is a computer or a device that receives data

Medium : It is the path through which message transmitted from the sender to the receiver. There are two types Guided and Un Guided media.

Protocol : The rules and conventions for transmitting data.

11.3 Communication Medium - There are two types guided and unguided.

11.3.1 Guided Media

1. **Twisted Pair cable** - 2 types unshielded twisted pair and shielded twisted pair. Two copper wires individually insulated and twisted around each other and put in a plastic cover.
2. **Coaxial cable** - A sturdy copper wire is insulated by plastic, it is covered just like a mesh by a conductor which is enclosed in an protective plastic coating. It is expenssive, less flexible and more difficult to install. But it is more reliable and carry for higher data rates.
3. **Optical fibre** - These are made of glass fibres that are enclosed in a plastic jacket. It uses light instead of electrical signals. The light sources are LED or ILD.