

Supplementary Material on Additional Sub-Topics included
in Class XII Physics Theory Syllabus in the Chapter on
Communication Systems for March – 2015 Examination

A. INTERNET

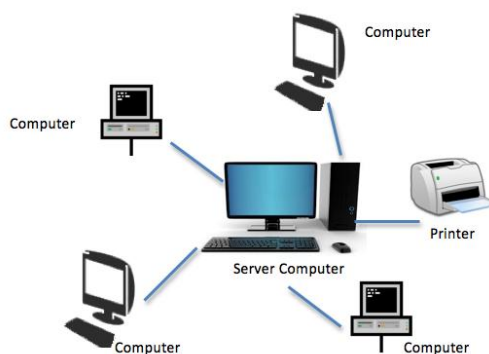
Introduction

Invention of computers changed the working style of people in twentieth century. Its capability to tirelessly and sequentially do arithmetical and logical operations made the human life simpler and faster. Offices, universities, banks, schools etc. nothing remained unaffected by use of computers. This was not enough and before the end of twentieth century we succeeded in creating a global network of computers that provides ways to exchange information and to communicate among all computers connected to the network. This global network of computers is what we now call Internet (or simply net). Internet, in fact, is the short form of INTERNET which is the interconnected network of all worldwide servers.

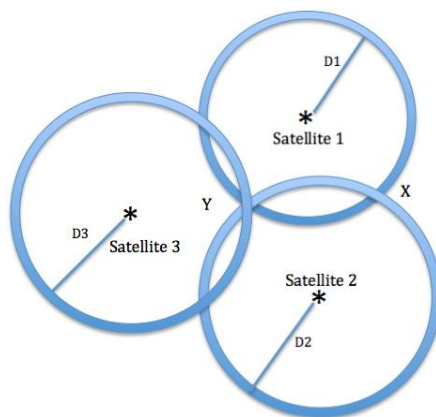
Networking of computers. The way Internet works

Two or more than two computers are said to be networked when they are able to exchange information between them. This sharing of information can be through wires connecting these computers or some wireless means of communications like Wi-Fi.

Networking of computers at small scale (e.g. within an office, a building or a school) is called **Local Area networking (LAN)**. One can also connect devices like printer, scanner, etc. to a LAN as shown in the figure below.



A Local Area Network (LAN)



This way, minimum three satellites together provide the exact location (longitude coordinates) of the GPS device user on his display board.

If a person is at some height on earth surface, then using distance information from minimum 4-GPS satellites even altitude of the user can also be measured.

It may be noted that since all 24-GPS satellites orbit in predefined orbits, therefore their locations are precisely predetermined. It is these known locations of 3 or 4 -GPS satellites (3 or 4 sets of longitude coordinates) and their distances to GPS device that assist a GPS user (i.e. its computing device) in locating its own longitude coordinates.

Applications of GPS

Global positioning system has many day-to-day applications:

- It helps in navigation on water, air and land.
- It assists in map designing of a location.
- It helps automatic vehicle movements (without man)
- One can measure speed of moving object using this technology.
- One can locate change in position of glaciers, mountains heights.
- It assists in keeping standard time world over.
- It assists in tracking animals and birds and studying their movements by attaching GPS devices to their bodies.
- It assists in airplane traffic movement.
- It assists visually impaired in location identification.