

Output Device :

1) CRT : (Cathode Ray Tube)

CRT is nothing but a vacuum tube. CRT has several main parts which are used to display picture on screen. Some important parts of CRT are as follows :

1) Electron beam:

Screen is made of many small dots which are termed as pixels. The more pixels you have the high resolution you can get. Pixels are formed with the help of electronic beams which are thrown and generated by electron guns.

2) Electron Guns:

This is the main part of CRT which is used to produce a pixel or you can say electronic beam. Electron guns can also be referred as Cathode.

3) Anode :

Anode is an accelerating part. Electron guns are used to produce electronic beam but anodes are used to push them ahead

forcefully. This is the reason they are called accelerating part of CRT which forcefully throw electron beams on the screen.

4) Deflecting Coils (York) :

(Electron guns create electronic beams , they are thrown(accelerated) with coils work with anode but how the whole screen is covered by a single gun? Deflecting coils work as magnetic field which magnetize electronic beams top-bottom or left-right. Electron beams are thrown after magnetizing by deflecting coils so that they can take their particular position on the screen. There are two types of deflecting coils. Horizontal and vertical. Horizontal move the beam left to the right as per direction similarly its vertical position is adjusted through vertical deflecting coil.

5) Phosphor Coated Screen :

High speed beam of the electrons files through the vacume in the tube and hits the flat screen at the other end of the tube. This

screen is coated with phosphor, which glows when struck by the beam.

LCD (Liquid Crystal Display):

LCD is the technology used for display in notebook and other smaller computers. LCDs allow display to be much thinner than CRTs. LCD consumes much less power than any other output device. LCDs are used widely in digital clocks, microwave ovens and many other electronic devices. LCDs are thinner and lighter comparing to CRTs.

Advantages:

- 1) It consumes less power.
- 2) It includes millions of color.
- 3) It lighter than LED.

Disadvantages:

- 1) It needs extra light source.
- 2) It have also restricted viewing angle.
- 3) Its speed is very slow.

LED (Light Emitting Diode) :

LED is a type of LCD that actually accompanies the advancement of technology. This replaces the fluorescent tube with backlight technology, which produces a clearer picture than the LCD. LED have wider viewing angle than the LCD. It have better black level and contrast in comparison to LCD display. LED delivers better color accuracy in comparison to the LCD.

Advantages:

- 1) Slim in Design
- 2) Lower power consumption
- 3) Better picture quality
- 4) Longer lifespan and less environmental impact

Disadvantages

- 1) Led computer is higher price compare to LCD & CRT
- 2) Led computer screen is light pollution because the screen is too bright.

Printer

Printer is most commonly used output device for producing hard copy of documents, text, images or all in one.

Mainly there are two types of printer

- 1) Impact Printer
- 2) Non-Impact Printer.

1) Impact Printer :

Impact printers use hammering method which impact characters on the paper and inked ribbon is used to print output.

2) Non-impact Printer :

Non-impact printers don't hit ribbon to print. They use inkjet technology to print output.

1) Impact Printer

- 1) Dot-matrix printer
- 2) Drum printer
- 3) Chain printer

2) Non-impact printer

- 1) Inkjet printer
- 2) Laser printer.

Impact Printer

1) Dot Matrix Printer:

It is a character printer that can print characters and all kinds of images as a pattern of dots.

It can print all types of characters in different sizes. It can also print images, charts and graphs.

Because it is an impact printer, it can generate multiple copies by using carbon paper.

It is slow in speed with range of 30 to 600 characters per second.

It is cheap in both purchasing and maintaining.

2) Drum Printer:

It is line printer that can print one line at a time.

It has a solid cylindrical drum with characters embossed on its surface.

Set of hammers mounted in front of drum in such a manner that can inked ribbon and paper can be placed between hammers and the drum.

They can only print a pre-defined set of characters in pre-defined style that is embossed on the drum

They are impact printer and generally monochrome (single in color).

The printing speed is in the range of 300 to 2000 lines per minute.

3) Chain Printer

It is line printer that can print one line at a time

It consists of metallic chain on which all characters are embossed.

Set of hammers mounted in the front of chain in such a manner that inked ribbon and paper can be placed between hammers and the chain.

They can print only pre-defined type and size of characters, images, charts and graphs.

They are impact printers and can be used for generating multiple copies by using carbon paper.

They are generating monochrome.

The printing speed is in the range of 400 to 3000.

Non-Impact Printer

1) Inkjet Printer :

They are character printers. That can print characters and all kinds of images by spraying small drops of ink on the paper.

Printing head contains up to 64 tiny nozzles that can be selectively heated up in a few micro second.

To print a character the printer selectively heats the proper set of nozzles as the print head moves horizontally.

They are non-impact printers so that they can not produce multiple copies of document in single printing.

They can be both monochrome and color.

They are slower in speed than impact printers with the range of 40 to 300 characters per second.

2) Laser Printer:

They are page printers that can print one page at a time.

It consists of a laser beam source a multisided mirror, photo and conductive drum and toner.

To print a page, the laser beam is focused on electro statistically charged drum by spinning multi – sided mirror.

Toner sticks to the drum in the places the laser beam has charged the drum's surface.

Toner is then permanently fused on the paper with heat and pressure to generate the printers output.

Laser printer produce high quality output having resolutions in the range of 600 to 1200 dpi(dot per inch).

It can print characters in different size and style, charts and graphs.

They are non-impact so that they can not produce multiple copies of document in single print.

They are very faster which can print 500 to 1000 page per minute. It is very expensive.

OLED (Organic LED) :

OLED is display technology which is different from LED.

It is based on organic substance used as semiconductor material in LED the display is created by sandwiching organic thin films between 2 conductors.

When an electrical current is applied to this structure, it emits a bright light.

Because OLED display don't require backlighting, they can be thinner and weight less than other display technology.

It has wide viewing angle up to 160 degree even in bright light. It require only 10 volts to operate.