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**Q1. (a) Discuss a few limitations of image scanners? How Optical Character Recognition (OCR) device overcomes these limitations?**  (6)

Image Scanner Limitation

Image produced by the scanner can take up a lot of memory space.

Image lose some Quality in the scanning and digesting process

Benefits or advantages of OCR

Following are the benefits or advantages of OCR:

* In spite of rough handling, one can read the OCR information with high degree of accuracy. Flatbed scanners are very accurate and can produce reasonably high quality images.
* The processing of OCR information is fast. Large quantities of text can be input quickly.
* A paper based form can be turned into an electronic form which is easy to store or send by mail.
* It is cheaper than paying someone amount to manually enter large amount of text data. Moreover it takes less time to convert in the electronic form.
* The latest software can re-create tables as well as original layout.

**(b) Elaborate the use of Magnetic Ink Character Recognition Device (MICR)?**

* **MICR**

MICR (magnetic ink character recognition) is a technology used to verify the legitimacy or originality of paper documents, especially checks. Special ink, which is sensitive to magnetic fields, is used in the printing of certain characters on the original documents. Information can be encoded in the magnetic characters.

**USES OF MICR**

1 MICR IS used for security and minimize the losses caused by some types of crime.

2 MICR readers is used to minimize their exposure to check fraud. Corporations and government agencies also use the technology to speed up the sorting of documents.

MICR is used to verify the legitimacy or originality of paper documents, especially checks.

MICR is used extensively in banking because magnetic-ink characters are difficult to forge and are therefore ideal for marking and identifying cheaques.

**Q2. (a) Differentiate between printer and plotter?**

**PLOTTER:**

Advanced type of printers used to make high quality drawings like maps, blueprints etc.

## PRINTER:

Printer is mainly an output device which makes graphics, pictures, text etc on a paper. Now a days printers have different printing methods, features and speeds depending on their price

## MAIN DIFFERENCE BETWEEN PLOTTER AND PRINTER:

|  |  |
| --- | --- |
| PRINTER | PLOTTER |
| used to print a single line | To print more than one line at the same time. |
| Used only to print the given data to another paper | Is used to make different maps and diagrams |
| The output of a printer mostly is in the format of pixels or bitmap format | The output of a plotter always comes in vector graphic format. |
| Either uses a needle or a pen to get the job done without any restrictions. | always has a pen or different types of knives to give shape to the image drawn |
| Low Speed | Higher Speed |

**(b) Explain the printing process of a LASER Printer? Laser printer**

A laser printer is a popular type of personal computer printer that uses a non-impact.

**Printing process of a LASER Printer**

1. The moment you press print on your computer, tablet or mobile device, the information is sent to the printer memory, where the data is stored.
2. The printer begins to warm up. This is the point where you usually need to wait, and it’s because the corona wire is heating up and getting ready to pass its positive static charge to the drum.
3. As the drum (coated metal cylinder) begins to roll, it received a positive charge across its whole surface. Some printers contain four drums, one for each color – Cyan, Magenta, and Yellow & Black.
4. The laser activates, and beams against a series of mirrors to reflect across the surface of the drum(s) imprinting the shape of your print using an opposite negative electrical charge.
5. The toner cartridge and hopper sat next to the drum(s) slowly releases positively charged carbon toner particles on to the drum as it turns. The toner is attracted to any areas of negative charge leaving positively charged areas of the drum untouched.
6. The transfer belt rolls the paper through the printer giving it a positive charge. As it passes the drum, the negatively charged toner is attracted to the page in the shape of your print.
7. The toner is then melted to the paper by hot rollers called the fuser unit, and voila, your page is printed.

Q3. (a) Explain Metropolitan Area Network (MAN) with a suitable example?

A metropolitan area network (MAN) is similar to a local area network (LAN) but spans an entire city or campus. MANs are formed by connecting multiple LANs. Thus, MANs are larger than LANs but smaller than wide area networks (WAN).

LAN, MAN and WAN are the three major types of the network designed to operate over the area they cover

**LAN** covers the smallest area

 **MAN** covers an area larger than LAN

**WAN** comprises the largest of all.
There are other types of Computer Networks

For example;

 A company can use a MAN to connect the LANs in all of its offices throughout city.

**(b) Define topology? Which topology would you chose to setup a local area network and why?**

## Topology

Network topology refers to how various nodes, devices, and connections on your network are physically or logically arranged in relation to each other.

Which topology would you chose to setup a local area network?

The best cabled network topology for large businesses is the star topology. This is because it is easier to control from a central console as the management software just needs to communicate with the switch to get full traffic management features. A hybrid topology is sometimes encountered as a temporary solution to connect together departments while a new unified system is being planned.

**Q4. In your opinion, what are the different types of common media used for storage, access and transmission of information? Explain each type in detail?**

Storage keeps data, information and instructions for use in the future. All computers use storage to keep the software that makes the hardware work.

As a user you store a variety of data and information on your computer or on storage media. Storage media are the physical materials on which data, information and instructions are kept. When a user saves information or data to a storage medium he or she is storing a file, and this process is called writing.

When the file is opened the process is called reading. Common storage media are:

Hard Drive: This storage medium which looks like the one below, is a hard drive. This medium comes with the computer and is always inside the computer.

It stores all the programs that the computer needs to work. In addition users store their data and information on the hard drive.

Floppy Disk: This storage medium is considered to be a portable storage medium. You put it into the computer save your information on it, take it out, and take it with you wherever you go.

CD&DVD: These types of storage media hold much more information than a floppy disk. They are also considered portable storage. These types of storage media come in different forms. This means that there are CDs and DVDs that you can only save information on but you cannot erase the information. In addition there are those that can both save information on and erase the information you have saved.

USB Flash Drive: This is a storage medium that is very easy to carry around and it also holds more data than a floppy disk. As you can see from the picture below it is very small when compared with the others.