UNIT 2
PERIPHERAL DEVICES

PART - A

1. What are the Peripheral devices in the Computer?
   - Some common peripherals used in the Computer are: Keyboard, CRT Monitor, Printer, Floppy Disk drive, Hard Disk drive, Mouse, CD-ROM drive, Modem, Scanner.
   - Some of the Special Peripherals used in certain applications: DVD drive, Digital Camera, Digitizer, Joystick, Light Pen, Zip drive, Tape Drive and Plotter.

2. Explain the various types of keys in the Keyboard?
   There are four major types of keys used in the Keyboard.
   - Function Keys (F1 to F12)
   - Numeric Keys
   - Cursor control and editing keys
   - Alphanumeric keys

3. Mention the functions performed by the keyboard electronics?
   The functions that are performed are:
   - Sensing a key depression.
   - Encoding.
   - Sensing the code to the computer.

4. List the types of key switches in the keyboard. Some of the common types are
   - Mechanical key switch
   - Membrane key switch
   - Capacitive key switch

5. What is CRT monitor?
   A cathode Ray Tube is a widely used Visual Display Unit[VDU], it is also called a CRT monitor, It is commonly used in Desktop Computers where huge size and heavy weight is not a problem.

6. What are the two ways of interfacing a CRT monitor to a computer?
   The two methods of interfacing a CRT monitor to the Computer:
   1) TTL video interface
      Here the computer sends video, HSYNC and VSYNC signals on separate wires.
   2) Composite video interface
      Here all the three signals, video, HSYNC, VSYNC are mixed and sent as a composite video waveform on a single wire.
7. Mention some of the characteristics of the printer.
   Some of the main characteristics of the printers are
   a. Speed
   b. Quality
   c. Character Set
   d. Interface
   e. Buffer size
   f. Print mechanism
   g. Print mode
   h. Print size
   i. Print direction

8. Explain the two formats for recording on a magnetic disk?
   The two formats are
   - FM- Frequency modulation
   - MFM- Modified Frequency Modulation
     **FM format:**
     Clock pulse is written at the beginning of each bit cell.
     Data pulse is written at the centre of each cell.
     If the data is 1, data pulse is present, if data is 0, there is no data pulse.
     Each bit cell is of 4µs duration for floppy disk.
     **MFM format:**
     Clock pulse is not present at the beginning of each bit cell.
     When the data is 1, there is no clock pulse, only data pulse is present at the centre of the cell
     When the data is 0 following a 1, neither clock pulse nor data pulse is written
     If the data is 0 in both current and in the previous bit cell, the clock pulse is at the beginning but there is no data pulse
     Each bit cell is of 2µs duration for floppy disk

9. State the reasons for HDD’s better performance than FDD.
   The HDD provides better performance than the FDD, for the following reasons:
   - Higher capacity of data storage
   - Faster access time of data
   - Higher data transfer rate
   - Better reliability of operation
   - Less data errors or data loss.
10. What are the differences in concepts between FDD and HDD?

<table>
<thead>
<tr>
<th>FDD</th>
<th>HDD</th>
</tr>
</thead>
<tbody>
<tr>
<td>The head touches the media surface during a R/W operation.</td>
<td>The head doesn't touch the media surface during a R/W operation. It flies above the disk at a minute distance called flying height.</td>
</tr>
<tr>
<td>It has maximum two R/W heads since the diskette has two surfaces.</td>
<td>It can have many platters mounted on a single spindle, accordingly it will have multiple R/W heads.</td>
</tr>
<tr>
<td>Head Positioning mechanism uses a Stepper motor.</td>
<td>Head Positioning mechanism, two options are available, i.e., Stepper motor Mechanism (Open-loop disk drive)</td>
</tr>
<tr>
<td>Diskette is rotated at lower speed, usually at 300 rpm or 360 rpm.</td>
<td>The platters are rotated at higher speed, usually at 2400 rpm, 3600 rpm, 4800 rpm, 7200 rpm.</td>
</tr>
<tr>
<td>No of tracks on the disk is lesser-usually 40 or 80. The track density is usually 48 TPI [Tracks Per Inch]</td>
<td>Higher track density is possible and even 1000 TPI is common.</td>
</tr>
<tr>
<td>Recording density, Bits Per Inch [BPI] lower than HDD.</td>
<td>High Recording density, Bits Per Inch [BPI] than FDD.</td>
</tr>
</tbody>
</table>

11. What is floppy diskette and explain about the write protect feature?

A floppy disk is an ultra thin plastic (Mylar) piece in circular shape. The thickness is only few 1000 th of an inch. It is coated with magnetic material and enclosed in a protective jacket.

**WRITE PROTECT FEATURE:**

There is a facility for reading the already stored information and to prevent any attempt to write new information on it.

In 5 1/4”:

There is a small notch punched at the outer edge of the jacket. This is known as write protect notch. If this is open (uncovered), writing is permitted. If it is covered by an insulated sticker, writing on it is not allowed.

In 3 1/2”:

There is a write-protect window with a plastic tab which can be moved to open or close the window. When the window is open, the write-protection is provided.
12. Differentiate between hard sectored and soft sectored floppy diskette.

<table>
<thead>
<tr>
<th>Hard sectored Floppy Diskette</th>
<th>Soft sectored Floppy Diskette</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of the sector is fixed. No flexibility in the sector size.</td>
<td>Sector size is variable. There is flexibility in the sector size.</td>
</tr>
<tr>
<td>Software has no control over the size</td>
<td>Software has control over the size</td>
</tr>
<tr>
<td>Sector size is decided by the manufacturer.</td>
<td>Sector size is decided by the software</td>
</tr>
<tr>
<td>Physical hole is available in the disk.</td>
<td>No physical hole is available in the disk.</td>
</tr>
</tbody>
</table>

13. What are the features of Winchester disk drive?
   The features of Winchester disk drive are
   - Read/Write heads and disks are contained in a sealed enclosure.
   - The head flies very close to the hard disk less than 19 micro inches.
   - The heads park on the parking zone when the disk is not rotating.
   - The surface of the disk is lubricated to prevent damage to the heads or track.

14. List the special types of Disk drives.
   There are some special types of Disk drives
   1. Super floppies.
      - Zip drives
      - LS 120
      - Sony HIFD.
   2. Magnetic Optic Drives

15. What are the three types of mouse?
    The three types of mouse are
    - Mechanical mouse.
    - Opto-mechanical mouse
    - Optical mouse.

16. Differentiate between Modem and Fax modem.
    **MODEM:**
    Modem is an acronym for MODulator Cum Demodulator, is an Input/Output device. When a computer sends data to another computer. Modem takes the digital data from the computer, modulator (transforms) it into analog voltages that can be transmitted over telephone lines. At receiving end it converts analog voltages to digital data.

    **FAX-MODEM:**
    It is a modem with additional capability of sending and receiving facsimiles (faxes). Using a fax software, a document, stored in the system can be transmitted via the fax-modem to another fax-modem or a fax-machine.
17. What is a scanner and explain the types of scanner?

Scanner is a special input device to convert both pictures and text into a stream of data. The types of scanner are

1. Drum Scanner
   It uses a PM(photo-multiplier) tube which is a sensing device. It has high sensitivity and good signal-to-noise ratio.

2. Flatbed Scanner
   The material to be scanned is kept to lie on a flat bed glass in the scanner. A light source and a CCD(Charged Coupled Device) are mounted on a motorized carriage. CCD converts light to electric pulses. The scanning head consists of the CCD moves across the pictures.

3. Sheet fed Scanner
   Instead of head moving over the page, the paper is pulled over the scan head. It is very small but improper mechanism can skew the paper being scanned.

4. Hand-held Scanner:
   It is held in hand and moved over the document sliding over it. Low cost and portability are advantages but poor quality is its drawback.

18. What is a digital camera?
   A digital camera captures instant digital images on its internal memory or in its internal floppy disk. It is interfaced to a PC and hence the picture is easily transferred to its hard disk. Lens is used to focus the image to be captured like the conventional camera. CCD is used as a primary sensing element instead of photographic film. CCD is an array of tiny phototransistors arranged in a grid.

20. Explain about DVD?
   - DVD is a new type of CD offering a storage capacity of 17 GB. Using MPEG (Moving Pictures Experts Group) and Dolby compression the DVD is an ideal multimedia peripheral device achieving theatre quality video and sound on a PC.
   - The Distance between the tracks in the DVD is less than half that in a CD.
   - The pits are also smaller than those in a CD.
   - Hence the laser spots have to be smaller which is achieved by a reduced wavelength in a DVD compared to a CD.

21. What are the special peripherals used?
   The special peripherals used are
   - Plotter
   - Light Pen
   - Joystick
   - Digitizer or Graphic Tablet
   - Magnetic tape devices.

22. When is a 'reset' control classified as hardware and software?
   The reset switch is pressed by the user to reset the system and start from scratch without switching off. This manual reset is known as hardware reset.
   The software reset is caused by pressing the three keys CRLT, ALT and DEL on the keyboard simultaneously.
23. Distinguish between impact and non-impact printers.

- **Impact printers:**
  In an impact printer, the character is formed by physical contact of the print head against an ink ribbon and onto paper.
  Eg: Dot matrix printer, Daisy wheel printer
- **Non-Impact printer:**
  In a non-impact printer, there is no contact of the head with the paper or ribbon.
  Eg: Thermal printer, laser printer

24. How is a trackball different from a mouse?

The mouse and trackball are two identical pointing devices with a single difference in shape. A trackball is a mouse turned upside down. The ball is present on the top and it is moved with user’s fingertips. Thus a trackball differs from mouse.

25. Mention the use of a joystick and annotate its working.

The joystick is used while playing games with computers. It is also used for creation of general symbol shapes. Using the joystick, the user positions the cursor to the desired location. The tilt angle of the joystick lever determines the direction of the cursor movement. The rate of speed of cursor movement is proportional to the distance of joystick lever from the vertical position.

**PART - B**

1. Explain in detail about the working principle of keyboard and CRT monitor.

   ✔ **Keyboard:**
   - **Encoding**
     - Diagram- Serial Keyboard
   - **Keyboard function**
     - Diagram – Keyboard Block Diagram
     - Mechanical Key switch Keyboard
       - Diagram - Mechanical Key switch
     - Capacitive Key switch Keyboard
     - Membrane Key switch Keyboard
   ✔ **CRT monitor:**
   - Diagram – CRT Monitor Block Diagram
   - TTL Interface
   - Composite Interface
2. Explain in detail about printer.
   ✓ Diagram – Printer Block Diagram
   ✓ Printer Characteristic
   ✓ Printer types
     • Impact and Non-impact printer
     • Character printer and Line printer
     • Draft, LQP and NLQ printer
     • Parallel Interface and serial Interface
     • Unidirectional and Bidirectional printers
   ✓ Daisy Wheel printer
   ✓ Dot Matrix printer
   ✓ Golf Ball printer
   ✓ Thermal printer
   ✓ Laser printer
   ✓ LED printer
   ✓ Ink Jet printer

3. Explain about Magnetic Storage Devices
   ✓ Basic principle
     • FM Recording Format
     • MFM Recording Format
     • Diagram – Head Configuration
   ✓ Disk Drive Types
     • Diagram
       ▪ Disk Drive Block diagram
       ▪ Interfacing Floppy Disk Drives
   ✓ Floppy Diskette
     • Write Protect feature
   ✓ Hard Sector and Soft Sector Format
     • Hard sectoring
     • Soft sectoring
     • Diagram
       ▪ Floppy Diskette
       ▪ Soft Sector Concept
     • Hard sector Versus Soft sector
   ✓ Floppy Disk Format
   ✓ Data Recording

4. Explain briefly about Floppy Disk Drive and Hard Disk Drive.
   ✓ Floppy Disk Drive:
     • Head Movement
     • Head Coils
     • Spindle Motor
     • PCBs
   ✓ Hard Disk Drive:
     • Removable Disk Drive and Fixed Disk Drive
• Moving Head and Fixed Head Disk Drive
• Single Head Assembly and Dual Head Assembly
• Winchester and Non-Winchester Disk Drive

• Open-Loop and Closed-Loop Disk Drive
  ▪ Diagram - Closed-Loop Positioning System
• Size and Capacity
• Hard Disk Drive Organisation
• Data Organisation on Hard Disk

5. Explain the following:
   (1) Mouse and Trackball
   (2) CD-ROM
   (3) Scanner
   (4) Digital Camera
   (5) Digital Versatile Disk

✓ Mouse and Trackball
  • Mouse
    ▪ Mechanical Mouse
    ▪ Opto – Mechanical Mouse
    ▪ Optical Mouse
  • Trackball
✓ CD-ROM
  • Diagram
    ▪ CD-ROM Drive Operation
    ▪ CD- Track Organisation
    ▪ Pit and Land
  • CD – R Drive
  • CD – RW Drive
✓ Scanner
  • Drum Scanner
  • Flatbed Scanner
  • Sheetfed Scanner
  • Hand-Held Scanner
✓ Digital Camera
  • Block diagram of Digital Camera
✓ Digital Versatile Disk

6. Explain about Special Type of Disk Drives and Special Peripherals.

✓ Special Types of Disk Drives:
  • The Zip Drive
  • LS120
  • MO Drives
  • Sony SMO-F551 MO Drive
• Near-field Recording

✓ Special Peripherals
  • Plotter
  • Light pen
  • Joystick
  • Digitizer or Graphic Tablet
  • Magnetic Tape Drives