Chapter NO.4
Storage Devices

4.01 Complete the following statements.

i) A byte is a group of _______________ bits.
ii) _______________ is a volatile memory.
iii) Storage capacity of a sector on floppy is a multiple of ____________ bytes.
iv) SIMMs provide ____________ memory capacity as compared to DIMMs.
v) The capacity of a CD of 700 MB is equivalent to __________ floppies.

Ans: i) 8    ii) RAM    iii) 512    iv) smaller    v) 500

4.02 Tick (✓) the following statements either true or false.

i) ROM is a part of computer’s internal memory.
ii) A DIMM contains many ROM chips.
iii) Hard disk is sequential access storage.
iv) Number of tracks on a CD is greater than a floppy.
v) A pit on a CD reflects laser light while a land scatters.

Ans:

i) True     ii) False     iii) False     iv) True     v) False

4.03 Encircle one choice A, B, C, or D in each of the multiple choice questions.

i) As compared to the main memory, secondary memory of a computer
   a. Has faster access                b. has smaller capacity
   c. is cheaper                      d. resides in CPU

ii) The data from RAM can be accessed at a speed close to
   a. Supersonic speed                b. Speed of light
   c. Speed of sound                  d. Speed of ultrasonic

iii) The number of read/write heads for a hard disk of four platters is
   a. 4                               b. 6                               c. 8   d. 16

iv) The number of tracks in one cylinder of hard disk with two platters is
   a. 4                               b. 8                               c. 16   d. 32

v) A hard disk is also called a
   a. Compact disk                    b. Winchester disk
   c. System disk                     d. Changeable disk
4.04 Match the items given in Column I with those given in Column II

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Nibble</td>
<td>a) Speed</td>
</tr>
<tr>
<td>ii) Word</td>
<td>b) Laser</td>
</tr>
<tr>
<td>iii) 16 MB RAM</td>
<td>c) Memory unit</td>
</tr>
<tr>
<td>iv) 128 MB RAM</td>
<td>d) SIMMs</td>
</tr>
<tr>
<td>v) CD-ROM</td>
<td>e) DIMMs</td>
</tr>
</tbody>
</table>

Ans: i) c ii) a iii) d iv) e v) b

Q.4.05 What is meant by computer storage? How will you classify it?

Ans: Computer storage is also referred as computer memory. It is actually an electronic file in which instructions and data are placed until needed. Storage is a major factor in computer power. More powerful computers store more data and process large amount of data.

Computer memory or storage has two major divisions. These are:

- Main memory or Internal memory
- Secondary memory or Backing storage

Q.4.06 What is smallest unit of memory in digital computer?

Ans: The smallest and basic unit of digital computer is bit, which stands for binary digit. A bit is binary number and has value 1 or 0 representing ON or OFF state.

Q.4.07 Name 4 memory units in which memory of a storage device is measured?

Ans: Four memory units in which memory of storage device is measured are as follow:

(i) Byte
(ii) Kilo Byte
(iii) Mega Byte
(iv) Giga Byte
Q.4.08 What is the significance of Byte? How other memory units are related with byte?

Ans: The significance of Byte:

A byte is generally used to express the memory of a computer. A group of eight bits is called a Byte. The capacity of computer storage is expressed in numbers of bits, bytes or characters.

Relation of Byte with other memory units:

- 1 nibble = $2^2$ bits = 4 bits
- 1 byte = $2^3$ bits = 8 bits
- 1 kilobyte (KB) = $2^{10}$ bytes = 1024 bytes
- 1 megabyte (MB) = $2^{20}$ bytes = 1024 kilobytes
- 1 gigabyte (GB) = $2^{30}$ bytes = 1024 megabytes
- 1 terabyte (TB) = $2^{40}$ bytes = 1024 gigabytes

Q.4.09 Name some of the computer’s primary and secondary storage devices.

Primary Storage Devices:

Some of the computer’s primary storage devices are RAM, ROM, CMOS, PROM, EPROM etc.

Secondary Storage Devices:

Some of the computer’s secondary storage devices are Magnetic Tape, Floppy Disks, Hard Disk etc.

Q.4.10 What do you know about RAM?

Ans: RAM is Random Access Memory. It is a temporary memory of a computer. It is also called volatile memory because everything that is stored in RAM is lost when the computer is turned off. RAM is a semiconductor memory with no moving part. Data can be accessed from RAM at very high speed very close to the speed of light.

Q.4.11 In what ways RAM and ROM differ?

<table>
<thead>
<tr>
<th>RAM</th>
<th>ROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>- It is Random Access Memory.</td>
<td>- It is Read Only Memory.</td>
</tr>
<tr>
<td>- It is a temporary memory of a computer</td>
<td>- It is a permanent of computer.</td>
</tr>
<tr>
<td>- It is volatile memory.</td>
<td>- It is non-volatile memory.</td>
</tr>
<tr>
<td>- everything that is stored in RAM is lost when the computer is turned off</td>
<td>- The contents of this type of memory are not lost when the computer is turned off</td>
</tr>
</tbody>
</table>
Q.4.12 What is ROM? How do PROM and EPROM differ from each other?

Ans: ROM:

ROM is Read Only Memory. It is a permanent of computer. It provides instructions to CPU during booting process. It is a non-volatile memory of a computer because the contents of this type of memory are not lost when the computer is turned off. ROM is a semiconductor memory generally programmed by the manufacture.

Difference of PROM and EPROM:

PROM is Programmable Read Only Memory. We can write once on PROM. EPROM is Erasable Programmable Read Only Memory. We can erase any written data or instruction once on it and also can write it.

Q.4.13 Differentiate between SIMMs and DIMMs.

<table>
<thead>
<tr>
<th>SIMM</th>
<th>DIMM</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is Single In-line Memory Module.</td>
<td>It is Dual In-line Memory Module</td>
</tr>
<tr>
<td>SIMM provides less storage capacity.</td>
<td>DIMM provide more storage capacity.</td>
</tr>
<tr>
<td>SIMM has smaller data bus.</td>
<td>DIMM has wider data bus.</td>
</tr>
<tr>
<td>It has low data transfer rate.</td>
<td>It has higher data transfer rate.</td>
</tr>
</tbody>
</table>

Q.4.14 Name the types in which magnetic disks can be divided.

Ans: Different types of disk drives and magnetic disks are in use. The most popular types of magnetic disks are interchangeble disks called the floppy disks and fixed disks called the hard disks.

Q.4.15 How data can be written on or retrieved from a floppy?

The data can be written on or retrieved from a floppy through the read and write head of floppy drive. The head of disk drive contacts the diskette through a window in the plastic cover. Over the window the floppy has a spring loaded metal shutter is pushed back when the disk is inserted to disk drive. Microcomputer disks use sector organization to store and retrieve data.

Q.4.16 Why the capacity of a Hard Disk is very large as compared to floppy disk?

The capacity of a hard disk is very large as compare to floppy disk because floppy disk contains only one diskette while hard disk contains many disk platters to store data.

Q.4.17 Describe various features of a Hard Disk?

Hard disks are high speed, large capacity disks and are referred as mass storage magnetic medium. Hard disk provides facility to read or retrieve information sequentially or randomly. A hard disk, also called Winchester disk, consist of one or more rigid metallic disk platters and their associated read/write heads encased in a sealed chamber. All the disk platters are stacked on a common rotating spindle. Data and the instructions are recorded on both the surface of a platter. For each recording surface there is a read or write head. All the heads move together.
Q.4.18 What is a CD-ROM? How does it differ from Hard Disk?

**CD-ROM:**

CD-ROM stands for Compact Disk Read Only Memory. It is a secondary storage device. The name implies to its application. Once inserted into the CD-ROM drive, the text, video, images and so on can be read into RAM for processing or display.

**Difference of CD ROM from Hard Disk:**

The data on these CDs are fixed and user cannot alter the data. While data stored in hard disk can be altered. The capacity of a single CD-ROM is up to 680 MB equivalent 500 floppies but hard disk has high storage capacity more than hundreds of GB. Unlike magnetic disks that store data in concentric tracks, a CD ROM stores data on a single track that spirals from the center to the outside edge. This ultrathin track spirals around the disk thousands of times.