**Chapter 7**

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| --- | --- | --- |
| **Num** | **Multiple Choice Answers** | **Matching Answers** |
| 1 | A | A |
| 2 | A | E |
| 3 | B | C |
| 4 | B | J |
| 5 | B | I Optical Disc |
| 6 | A | H |
| 7 | D | G |
| 8 | C | B |
| 9 | D | D |
| 10 | D | F |

**Open Ended Questions:**

1. **Compare primary storage and secondary storage and discuss the most important characteristics of secondary storage.**

Storage is the ability to save, to back up and even to transport files consisting of data or programs from one location or computer to another.

* **Primary storage** - Random-access memory (RAM) holds or stores data and programs that the CPU is currently processing. RAM is sometimes referred to as primary storage. Most RAM provides only temporary or volatile storage – if the computer is turned off or loses power, all the information stored on RAM is erased.
* **Secondary storage** provides permanent or nonvolatile storage. Using secondary storage devices, data and programs can be retained after the computer has been shut off.
* Important characteristics of secondary storage
  + **Media** - are the actual physical material that holds the data and programs.
  + **Capacity -** measures how much a particular storage medium can store.
  + **Storage** **devices** - are hardware that read data and programs from storage media. Most also write to storage media.
  + **Access speed** or access time - measures the amount of time required by the storage device to retrieve data and programs.
* 主存：主存通常指RAM，用于存储CPU当前处理的数据和指令，临时存储器，所存储的内容断电不再保留。
* 辅助存储器：永久性存储数据和指令的存储设备，包括硬盘、光盘、固态存储器等设备。
* 辅助存储器的主要特征：

1.物理介质：存储设备的物理材料。

2.存储容量：辅助存储器存储空间的大小。

3.读写设备：用于对辅助存储器进行读/写操作的设备。

4.读写速度：单位时间内的读/写数据量。

1. **Discuss optical discs including pits, lands, CDs, DVDs, Blue-ray, and hi def.**

* **Optical Discs**
* Can hold over 128 gigabytes of data
* A laser beam alters the surface of a plastic or metallic disc to represent data. Optical discs use reflective light to represent data.
* **Pits and lands**: The 1s and 0s are represented by flat areas called lands and bumpy areas called pits on the disc surface.
* Disc is read by an optical disc drive using a laser that projects a tiny beam of light on these areas. The amount of reflected light determines whether the area represents a 1 or a 0.
* Optical discs typically use a single track that spirals toward the center of the disk. This single track is divided into equally sized sectors.
* **Compact Disc (CD)**
* Were the first widely available optical format for PC users, but have largely been replaced by DVDs and Blu-rays
* Store 700 MB (megabytes) on one side of a CD
* Often stores music
* **Digital Versatile Disc (DVD)**
* DVD stands for digital versatile disc or digital video disc
* Can store 4.7 GB (gigabytes) on one side of a DVD disc
* Capacity is 7 times that of a CD
* **Blu-ray Disc (BD)**
* Store hi-def (high definition) video
* Have a greater capacity than DVDs
* Newest Blu-ray disks, Ultra HD Blu-rays (UHD BD) can play back 4K video content and store up to 100 GB of data
* **Basic formats:**
  + Read only--cannot be written on or erased by the user.
  + Write once--can be written to once and read many times but cannot be written to or erased
  + Rewriteable--can be written to many times as the disc surface is not permanently altered when data is recorded
* 光盘：大容量存储设备，采用金属压膜技术使盘面产生大量凹面和凸面，以激光照射到盘面的反射光强弱表示0和1。
* 光盘分类：

1. CD: 传统光盘，容量较小，700M左右。
2. DVD：数字通用盘，容量有较大提升，5GB左右。
3. BD：蓝光光盘，新一代光盘，其中超清蓝光光盘 (UHD BD)容量可达100G。

* 光盘格式：

1. ROM：只读光盘，不可写。
2. R: 可读/写光盘，不可擦除重写。
3. RW： 可读/写光盘，可擦除重写。