**Chapter 5**

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

**Open Ended Questions:**

**2、Describe system boards including sockets, chips, chip carriers, slots, and bus lines.**

System board is also known as the mainboard or motherboard. The system board controls communications for the entire computer system. Every component within the system unit connects to the system board. All external devices including the keyboard, mouse, and monitor connect to the system board. It acts as a data path and traffic monitor, allowing the various components to communicate efficiently with one another. The system board is a flat circuit board covered with a variety of different electronic components including:

* **Sockets** – provide a connection point for small specialized electronic parts called chips. Sockets are used to connect the system board to a variety of different types of chips, including microprocessors and memory chips.
* **Chips**-consist of tiny circuit boards etched onto squares of sand-like material called silicon. A chip is also called a silicon chip, semiconductor, or integrated circuit.
* **Chip carriers**– chips are mounted on carrier packages. These packages plug either directly into sockets on the system board or onto cards that are then plugged into slots on the system board.
* **Slots** – provide a connection point for specialized cards or circuit boards
* **Bus lines** – provide pathways that support communication among the various electronic components that are either located on the system board or attached to the system board.
* 系统板又称主板或母板，控制整个计算机系统的通信，与系统单元中的电子元件通过插口或插槽连接，与键盘、鼠标和显示器等外围设备通过接口连接，负责提供数据通道和流量监控，保证系统部件间的有效通信。是一块覆盖各种电子元件的平板电路板
* 插槽：条状结构，用于将内存、扩展板等电子元件连接到系统板。
* 插口：用于将芯片等电子元件连接到系统板。
* 芯片：微小的电路板，蚀刻在叫做硅的正方形沙状材料上。芯片也称为硅芯片、半导体或集成电路。
* 芯片载体：封装芯片的载体。
* 总线：CPU和其它电子元件的通信通道。

**4、Define computer memory including RAM, ROM, and flash memory.**

Memory is a holding area for data, instructions, and information. Memory is contained on chips connected to the system board. There are three well-known types of memory chips: random-access memory (RAM), read-only memory (ROM), and flash memory.

* Random-access memory (ROM) chips hold the program (sequence of instructions) and data that the CPU is presently processing. RAM is called temporary or volatile storage because everything in most types of RAM is lost as soon as the personal computer is turned off.
  + Cache memory improves processing by acting as a temporary high-speed holding area between the memory and the CPU. The computer detects which information in RAM is most frequently used and then copies that information into the cache.
* Read-only memory (ROM) chips have information stored in them by the manufacturer. Unlike RAM chips, ROM chips are not volatile and cannot be changed by the user. “Read only” means that the CPU can read or retrieve data and programs written on the ROM chip. However, the computer cannot write-encode or change- the information or instructions in ROM. Not long ago, ROM chips were typically used to contain almost all instructions for basic computer operations. Recently, however, flash memory chips have replaced ROM chips for many applications.
* Flash memory offers a combination of the features of RAM and ROM. Like RAM, it can be updated to store new information. Like ROM, it does not lose that information when power to the computer system is turned off. Flash memory is used to store startup instructions, which is the system's BIOS (basic input/output system).
* 内存用于存储数据和指令，可高速访问，是系统单元的电子元件，包括：随机存取存储器(RAM)、只读内存(ROM)和闪存。
* 随机存取存储器(RAM)：可读可写的内存芯片，又称临时存储器，存放CPU当前处理的数据和指令，断电后无法恢复。
* 只读内存(ROM)：出厂前已写入数据和指令的内存，可读不可写，断电无影响。
* 闪存：兼顾ROM和RAM的特点，与RAM一样可读写，与ROM一样断电无影响，用来存放开机设置的相关指令，即BIOS。

**6、Describe bus line, bus width, system bus, and expansion bus.**

A bus line, or bus, connects the parts of the CPU to each other. Buses also link the CPU to various other components on the system board. A bus is a pathway for bits representing data and instructions.

* The number of bits that can travel simultaneously down a bus is known as bus width.
* System buses connect the CPT to memory on the systen board.
* Expansion buses connect the CPU to other components on the system board, including expansion slots. The principal types are:
  + **Universal serial bus (USB)** is widely used to connect external USB devices. The USB then connects to the PCI bus on the system board.
  + **FireWire bus** – like USB but more specialized. They are used primarily to connect audio and video equipment to the system board.
  + **PCI Express (PCIe)** is widely used in powerful computers. Unlike most other buses that share a single bus line or path with several devices, the PCIe bus provides a single dedicated path for each connected device.
* 总线是连接CPU与系统板上其它电子元件的通信通道，传输用比特表达的数据和指令。
* 总线宽度：可同时传输的比特数。
* 系统总线：用于CPU与内存通信的总线。
* 扩展总线：用于CPU与其它电子元件通信的总线。