

Inside System Unit

EXERCISE

Q1. Select the best choice for the following MCQs.

- i. _____ changes alternating current (AC) to low-voltage direct current (DC) to operate the processor and peripheral devices.
 - A. Motherboard
 - B. Power Supply**
 - C. Output Unit
 - D. Register
- ii. Which of the following is the firmware built into the computer system?
 - A. Slot
 - B. RAM
 - C. Port
 - D. BIOS**
- iii. _____ are openings or sockets in a computer motherboard where a circuit board or expansion card can be inserted to add new functionalities to the computer.
 - A. BIOS
 - B. Ports
 - C. Power Supplies

D. Expansion Slots

- iv. Which of the following port is a high-speed point-to-point channel (pathway), primarily used for 3D computer graphics?
 - A. AGP**
 - B. PCI
 - C. PCIe
 - D. ISA
- v. _____ is a new technology cable for connecting storage drives to computer.
 - A. IDE
 - B. PCIe
 - C. FD
 - D. SATA**
- vi. Which of the following is the fastest slot?
 - A. AGP**
 - B. PCI
 - C. PCIe
 - D. ISA
- vii. _____ is the circuit which enables the CPU to communicate with disk drives.
 - A. Memory
 - B. Disk controller**
 - C. Bus
 - D. Port

viii. _____ is the most commonly used port in modern computers for connecting a large variety of devices to the computer.

- A. USB
- B. PS/2
- C. Fire wire
- D. LPT1

ix. Which of the following cards facilitates the input and output of audio signals to and from a computer?

- A. Video Card
- B. Modem Card
- C. Sound card
- D. Network Interface Card

Q2. Give short answers to the following questions.

i. Differentiate between CPU and System unit.

Ans. CPU

Sometimes people refer the system unit as CPU but these are two different things. A computer **System Unit** is the case with the motherboard and all the other parts while CPU is the Central Processing Unit, a chip on the motherboard that does all the processing.

System unit:

The CPU chip is installed in a slot on motherboard which is placed inside the casing of the system unit.

ii. Define two main types of computer casings.

Ans. Types of computer casings:

Computer case also known as computer chassis, cabinet, box, tower, enclosure, housing, system unit or simply case is the enclosure that contains most of the components of computer system. There are two common types of Computer casings.

Desktop Casing:

Desktop casing is the old type of casing which is designed to keep on the desk and usually monitor is placed over it.

Tower Casing:

Tower casing is the modern type of casing which is more attractive and common. Monitor is kept side by side with the tower casing.

iii. List different parts of a motherboard.

Ans. Parts of a motherboard:

Motherboard is the main circuit board in computer system that hold main component of the system unit. It is mounted inside the casing. It is securely attached via small screws through pre-drilled holes. Most modern motherboard may include the following:

- One or more slots for CPU
- Slots for main memory
- Integrated Graphics Cards
- PCI Slots
- PCI Express Slots
- IDE Connector (for Hard Disk, CD Drive)

- SATA Connector
- Connectors for peripheral devices (mouse, keyboard, speaker, Mic etc.).

iv. **What is role of BIOS in computer system?**

Ans. Role of BIOS:

Basic Input Output System (BIOS) also known as the System BIOS or simply BIOS is the firmware built into the computer system. BIOS is the first program run by a computer when it is powered on. The main function of the BIOS is to load and start an operating system (OS). The first job of BIOS is to check and initialize system devices such as the video card, keyboard, mouse, hard disk and other hardware. BIOS then locates OS on hard disk or CD or flash memory drive. After loading and executing the OS, BIOS gives control to the operating system. This process is called booting or booting up the system.

v. **Define system bus.**

Ans. System bus:

Bus is a data communication path over which information is transferred in bytes or words at a time. System bus connects the CPU to main memory on the motherboard. The majority of system buses are made up of 50 to 100 distinct lines for communication.

vi. **Differentiate between a port and a slot.**

Ans. Port:

In computer hardware, a port connects peripheral devices to the computer system. A port is a piece of equipment to which a plug or cable is connected.

Serial Ports, Parallel Port, VGA Port and USB (Universal Serial Bus) are common ports.

Slot:

It is an opening or socket in a computer motherboard where a circuit board or expansion card can be inserted to add new functionalities to the computer. Nearly all computers contain expansion slots. The devices inserted into the expansion slots are called expansion cards. The common standard of expansion slots includes AGP, PCI and PCI Express.

vii. **Name different types of data cables with their purpose of use.**

Ans. Types of data cables:

Data cable is any media that allows baseband transmissions (binary 1,0s) from a transmitter to a receiver.

Examples are:

- **Networking Media:** Network media is the actual path over which an electrical signal travels as it moves from one component to another.
- **USB cable:** USB, short for Universal Serial Bus, used for the connection between computers and electronic devices.
- **Token Ring Cables (Cat4):** It is used in telephone networks which can transmit voice and data up to 16 Mbit/s.
- **Optical fiber cable:** An optical fiber cable is a cable containing one or more optical fibers that are used to carry light.

- **Serial cable:** A serial cable is a cable used to transfer information between two devices using a serial communication protocol.

viii. **Why cooling system is important for a computer?**

Ans. Cooling system:

Cooling system is used to maintain proper temperature inside the system unit. Various hardware such as CPU, video card and even the hard drive generate heat inside the casing. If the temperature inside the system unit reaches a certain point, it can damage the parts. Hence the cooling is maintained through the use of heat sinks and fans.

Q3. Give detailed answers to the following questions.

i. **Discuss different types of expansion cards.**

Ans. Expansion Cards

Expansion cards are circuit boards, which are inserted into expansion slots on the motherboard. These cards provide new enhancements to the computer system such as sound, video, Internet access and network access.

Types of Expansion Cards

i. **Sound Card**

Sound card also known as an audio card is an internal expansion card that facilitates the input and output of audio signals to and from a computer. A sound card plays voice as well as music files and can handle various audio file formats. The typical sound card has an

interface available at the back of the computer with multiple input and output ports.

ii. **Video Card**

A video card also known as video adapter, graphics accelerator card, display card or graphics card is an expansion card whose function is to generate output to a display unit. Some cards contain dual GPUs for additional performance. Graphic cards generate heat that's why built-in heat sink and fans is used to cool it.

iii. **Modem Card**

The term modem is derived from modulator and demodulator. The main purpose of modem is to convert digital data into analog signals before sending it over the transmission line and convert it to digital signal on the receiving computer.

iv. **Network Interface Card (NIC)**

A Network Interface Card also known as network adapter and LAN adapter. It is a computer hardware component that connect a computer to a computer network. Usually NIC is installed as expansion card in the expansion slot, but most modern computers have built-in NIC on the motherboard.

ii. **What is port? Explain different types of ports in computers.**

Ans. Port

Ports are connectors used to connect external cables and devices to the motherboard.

Types of Port

a. Serial Ports

A serial port is a serial communication physical interface through which data transfers in or out one bit at a time. Serial ports have 9 or 25 pins in which one pin is used for transmitting data and the rest are used to transmit control signals. These ports are called COM1, COM2 and COM3. These ports were used in old types of computers to connect devices like modems. These ports have been replaced with USB ports in modern computers.

b. Parallel Ports

A parallel port is a parallel communication physical interface. It is also known as a printer port. Parallel ports can transmit multiple bits over several wires at a time. These ports have 25 pins, in which 8 pins transmit one byte of information and the others are used for transmitting control signals. Parallel ports are named as LPT1, LPT2 and LPT3. In today's modern computers parallel ports have been replaced with USB ports.

c. PS/2 Port

The PS/2 connectors are used for connecting keyboard and mouse to an IBM compatible personal computer. Its name comes from the IBM Personal System/s series of personal computers which were introduced in 1987. The PS/2 mouse connector replaced the older serial mouse connector, while PS/2 keyboard connector replaced the larger keyboard connector used in the IBM PC/AT design.

The purple PS/2 connector is used for keyboard and green is used for mouse.

d. USB Port

USB (Universal Serial Bus) is a serial port which provides a fast serial transmission between devices and computers. It is the most commonly used port in modern computers. Printers, scanners, cameras, mouse, keyboard and USB flash drives can be connected through USB ports. These are plug-and-play ports. Plug-and-play ports automatically detect and determine what type of device is attached to the computer. When a computer detects a plug-and-play device it automatically installs the driver for it or prompts the user to install it. USB has replaced old serial and parallel ports in computer systems.

e. Fire wire Port

Fire wire is a high speed port which is used to connect video devices such as video Cameras, Camcorders, etc. to the computer system. Fire wire port has four or six pins. In a six pin connection, 2 extra pins are used to provide electric power. Laptop computers have 4-pin fire wire port because they do not provide electric power to devices connected to it.

iii. What is a system bus? Explain different types of buses used in computers.

Ans. System Bus

A bus is a data communication path over which information is transferred as a byte or word at a time. System bus connects the central processing Unit to main

memory on the motherboard. The majority of system buses are made up of 50 to 100 distinct lines for communication.

Types of Bus

1) Data Bus

Data bus is the bidirectional bus. It can communicate in two ways, but in one direction at a time. It handles the transfer of data and instructions. The data bus is used to transfer instructions from memory to the CPU for execution. It carries data (operands) to and from the CPU and memory as required. It is also used to transfer data between memory and I/O devices during input output operations. A typical data bus is 32-bits wide. This means that up to 32-bits of data can travel through a data bus every second. New computers have 64-bit data buses and even more.

2) Address Bus

Address bus carries addresses not data. An address is defined as a label used to designate a memory location or register where information is stored. Before data or instructions can be written into or read from memory by the CPU or I/O sections, an address must be transmitted to memory over the address bus. The number of lines on the bus determines the number of addressable memory elements. For example, an 8-bit bus can represent 2^8 i.e. 256 unique addresses. A 16-bit bus can address 65536 unique addresses.

3) Control Bus

To direct and monitor the actions of other functional areas of the computer the CPU uses control

bus. It is used to transmit a variety of individual signals like read, write, interrupt, acknowledge etc. to control the operations of computer. The size of control bus is from 8 to 16 bits.

iv. Explain different types of ribbon cables.

Ans. Ribbon Cable

A ribbon cable also known as multi-wire planar cable is a cable with many conducting wires running parallel to each other on the same flat plane. As a result the cable is wide and flat as ribbon. Ribbon cables are commonly used for internal peripheral of computer, such as hard drives, CD drives and floppy drives.

Types of Ribbon Cable

a) IDE Cable

IDE short for Integrated Drive Electronics is more commonly known as ATA/ATAPI (Advance Technology Attachment/ ATA Packet Interface) or PATA (Parallel ATA) is a ribbon cable standard used for connecting hard drives developed by Western Digital. Original IDE was designed only for hard drives. ATAPI a new version was developed to connect CD-ROM, tape drives and Zip drive. IDE has largely been replaced by Serial ATA (SATA) in newer systems.

b) SATA Cable

SATA (Serial Advanced Technology Attachment) is a new technology cable for connecting storage drives to computer. These cables transfer data at high rates (from 1.5 to 6 gigabytes per second). It was designed to replace

IDE bus interface. SATA bus interface is used in all the modern laptop and desktop computers. SATA drives communicate at a high speed. SATA1, SATA2 and SATA3 interfaces provide communications at rates of 1.5 GB/Sec, 3 GB/Sec and 6 GB/Sec respectively.

c) **FD Cable**

FD (Floppy Disk) cable was used in the past to connect floppy drives to the motherboard. Floppy drives are almost obsolete now days. Due to this reason FD cable is no more used with modern microcomputers.

v. **Discuss different types of memory chips.**

Ans. Memory chip

Memory chip is an integrated circuit that can store data or can be used to process code. Memory chips can hold memory either temporarily through Random Access Memory (RAM) or permanently through Read Only Memory (ROM).

Types of memory chips:

a) **DRAM**

Dynamic Random Access Memory (DRAM) chips: Also known as volatile memory chips because they lose memory once the power supply is removed. DRAM can only transmit a single line of memory and needs to be constantly refreshed to prevent the loss of memory bits.

b) **SRAM**

Static random access memory (SRAM) chips: Non-volatile chips that are commonly used in portable battery-

powered devices. Unlike DRAM, they do not need to be refreshed and do not immediately lose memory when the power source is disconnected.

c) **FIFO**

First In, First Out (FIFO) memory chips: Mainly used when memory is being transferred between different types of devices.

d) **EPROM**

Erasable Programmable Read Only Memory (EPROM): The memory in these chips can be erased when exposed to ultraviolet rays. These chips can then be reprogrammed for a new set of data values.

e) **PROM**

Programmable read only memory (PROM) memory: Differs from other programmable memory chips as they can only be programmed once. The contents cannot be erased electronically or through ultraviolet rays.