SRINIVAS UNIVERSITY

QUESTION BANK WITH ANSWER

FOUNDATION OF INFORMATION TECHNOLOGY

UNIT 1

Multiple Choice Questions:

1. Which of the following is an example of non-volatile memory?

   A.VLSI   **B.ROM**

   C.RAM   D.LSI

2. Which of the following is the most powerful type of computer?

   A. Super–micro   B. **Supercomputer**

   C.Super conductor   D. Mega frame

3. The_____is the administrative section of the computer system?

   A. **Central Processing Unit**   B. ControlUnit

   C.InputUnit   D. Memory Unit

4. One byte is equivalent to?

   A. 4bits   B.32bits

   C.8 bits   D.12bits

5. The computer that is not considered a portable computer is?

   A. notebook computer   B. Laptop computer

   C.Mini computer   D. None of these

6. Select the smallest memory size?

   A. Terabyte   **B.Kilo byte**

   C. Gigabyte   D. None of these

7. UNIVAC is an example of

   A. **First generation computer**   B. Second generation computer

   C. Third generation computer   D. Fourth generation computer

8. A terabyte comprises?

   A. of4megabyte   B.1024byte

   C.1024gigabyte   D.1024 kilobyte

9. Which of the following refers to the memory in your com computer

A.**RAM**   B.DSL

C.USB   D.LAN

10. Information travels between components on the motherboard through_____

A.Flash memory   B.CMOS

C.Bays   **D.Buses**

11. How many options does a binary choice offer?

A.One   **B.Two**

C.Three   D.None

12. Binary number system consists of?

A. Depends on com the computer to computer   B. alpha numeric characters

C. 0's and1'sonly   D. None of these

13. Which is a type of ROM

A.PROM   B.EPROM

C.EEPROM   **D. All of above**

14. Which among the g following is considered a volatile memory?

A.CD-ROM   B. Hard Disk

C.**RAM**   D.ROM

15. When a document is opened in a computer it is temporarily stored

in?A.ROM   **B.RAM**

C.HardDisk   D. All of above

16. Which among the following is considered as fastest memory?

A. External Hard Disk   B.RAM

C. Cache   D.ROM

16. All memory units are expressed as powers of?

A.2   B.5

C.10   D.20

17. Which is not true about Random Access Memory?
    A. Data can be read and written
    B. Data can be accessed randomly
    C. Data is retained as long as the computer is powered on
    D. Data stays permanently written

18. The set of wires, which carry information in a controlled manner, is known as?

    A.Public bus   **B. SystemBus**

    C.ControlBus   D. PrivateBus

19. What is the unit of speed of Super Computer?

    A.KFLOPS   B.LFLOPS

    C.MFLOPS   D.**GFLOPS**

20. In which generation of computers microprocessors was introduced?
    A. First Generation   B. Second Generation

    C. Third Generation   D. **Fourth Generation**

21. One million bytes of information are?
    A. **1MB**   B.1GB
    C.1KB   D. None of above

22. What is the name of the first super computer of
    India?A.Saga220   B.ENIAC

    C.PARAM8000   D.PARAM 6000

23. Who is also known as the Father of computers?
    A. VintCerf   B. Tim Berner Lee

    C. Charles Babbage   D. Steve Jobs

24. What is the full form of ALU?
    A. **Arithmetic logic unit**   B. Arithmetic least unit

    C. Ascii logic unit   D. Allowed logic unit

25. In which of the following form, data is stored on the computer?
    A.Decimal   B.**Binary**

    C. HexaDecimal   D. Octal

26. What are some common uses for a computer?

   A. Using the Internet to search   B. Writing letters in Microsoft word

C. Keeping track of finances in Microsoft Excel

D**. All of the above**

LONG ANSWER QUESTIONS:

1. **State and explain any 4 characteristics of computers.**
   Speed The computer can process data very fast, at the rate of millions of instructions per second. In a few seconds, a computer can perform such a huge task that a normal human being may take days or even years6 to complete. The speed of a computer is calculated in MHz (megahertz) i.e. One million instructions per second.

   Accuracy Computer provides a high degree of accuracy. For example, the computers can accurately give the result of the division of any two numbers up to 10decimalplaces.

   Diligence When used for a longer period, the computer does not get tired. It can perform long and complex calculations with the same speed and accuracy from the start till the end.

   Reliability is the measurement of the performance of a computer, which is measured against some predetermined standard for operation without any failure.

   Storage Capability Large volumes of data and information can be stored in the computer and also retrieved whenever required. A limited amount of data can be stored, temporarily, in the primary memory. Secondary storage devices like magnetic tape or disks can store a large amount of data permanently.

   Versatility It can perform different types of tasks with the same ease. At one moment you can use the computer to prepare a letter document and in the next moment, you may play music or print a document.

   Resource sharing Computers today can connect. This has made the sharing of costly resources like printers possible. Apart from device sharing, data and information can also be shared among groups of computers, thus creating large information.

2. **Define computers and briefly explain the classification of computers.**
   The term computer is derived from the word compute. The word compute means to calculate. A computer is an electronic machine that accepts data from the user, processes the data by performing calculations and operations on it, and generates the desired output results.

   Microcomputers
   The microcomputer is generally the smallest of the computer family.
   These were designed for individual users only, but nowadays they have become powerful tools for many businesses that, when networked together, can serve more than one user.
   Microcomputers include desktop, laptop, and hand-held models(PDA)

Minicomputers

Minicomputers are digital computers, generally used in multi-user systems. They have high processing speed and high storage capacity than microcomputers. The mini-computers can support 4- 200 users simultaneously.

Mainframes

It can process and store more data than a minicomputer and far more than a microcomputer.

It is designed to perform at a faster rate than a minicomputer and an, even more, fasterrate than a microcomputer.

Mainframes can usually execute many programs simultaneously, at a high speed.

Supercomputers

Supercomputers are the fastest and the most expensive machines.

They have high processing speed compared to other computers. The speed of a supercomputer is generally measured in FLOPS (Floating point Operations per Second). A supercomputer has the highest processing speed.

Supercomputers are built by interconnecting thousands of processors that can work in parallel.

3. **List and explain the application of computers in any 4areas.**

Science: Scientists have been using computers to develop theories, analyze, and test data. They can be used to generate detailed studies of how earthquakes affect buildings.

Medicine and Health Care: Now, doctors are using computers right from diagnosing the illness to monitoring a patient's status during complex surgery. By using automated imaging techniques, doctors can look inside a person's body and can study each organ in detail which was not possible a few years ago.

Communication: Email or Electronic Mail is one of the communication media in which a computer is used. Through e-mail, messages and reports are passed from one person to or more persons with the aid of a computer and telephone line.

Banking: In the field of banking and finance, computers are extensively used. People can use the ATM(Automated Teller Machine) services 24 hours aday to deposit and withdraw cash.

When the different branches of the bank are connected through the computer networks, then inter-branch transactions such as cheques and drafts can be done by the computers without any delay.

4. **Describe Cache memory.**

- Cache Memory

The cache is a very high-speed, expensive piece of memory, which is used to speed up the memory retrieval process. Due to its higher cost, the CPU comes with a relatively small amount of cache compared with the main memory.

Without the cache memory, every time the CPU requests for data, it would send a request to the main memory which would then be sent back across the system bus to the CPU. This is a slow process in computing terms. The idea of introducing cache is that this is extremely fast memory.

Let us consider an example of a library system for a better understanding of the cache concept. When a person comes into the library and asks for a book, the librarian searches for the requested book in the bookshelves (system bus), retrieves the book, and delivers it

to the person. After the person reads the book, it is returned to the library. At the same time, if any other person comes in requesting the same book, which is still placed on the librarian's desk, the librarian does not have to go through the process of searching for the book on the bookshelves.

A CPU cache is a hardware cache used by the central processing unit (CPU) of a computer to reduce the average cost (time or energy) to access data from the main memory. A cache is a smaller, faster memory, closer to a processor core, which stores copies of the data from frequently used main memory locations.

Caches are generally sized in powers of two: 4, 8, 16, etc. KiB or MiB (for larger non-L1)sizes.

5. List and explain the various types of ROM.

Masked ROM: The very first ROMs were hard-wired devices that contained a pre-programmed set of data or instructions. These kinds of ROMs are known as masked ROMs.

Programmable ROM (PROM): Programmable Read-only Memory (PROM), which can be programmed. Once a PROM has been programmed, its contents can never be changed. As a result, PROM is also known as a one-time programmable (OTP) device. Like other ROMs, the information stored in PROM is also non-volatile.

Erasable Programmable ROM (EPROM): An EPROM is programmed in the same manner as a PROM. However, unlike PROM, an EPROM can be erased and reprogrammed repeatedly. Although EPROM is more expensive than PROM, its ability to be reprogrammed makes them an essential part of the software development and testing process.

Electrically Erasable Programmable ROM(EEPROM): This type of ROM can be erased by an electrical charge and then written to by using a slightly higher-than-normal voltage. EEPROM can be erased one byte at a time, rather than erasing the entire chip with ultraviolet light. Hence, the process of re-programming is flexible but slow.

Flash ROM: Is also called flash BIOS or flash memory, is a type of constantly powered non-volatile memory that can be erased and reprogrammed in blocks. When BIOS needs to be changed or rewritten, the flash memory can be written in block (rather than byte) sizes making it easy to update.

6. Describe the system bus

A bus is a set of connections between two or more components/devices, which are designed to transfer several/all bits of a word from a specific source to a destination. A bus consists of multiple paths, which are also termed lines; each line is capable of transferring one bit at a time. Thus, to transmit 8 bits simultaneously over a bus, 8 lines are required to transfer the data.

A bus can be unidirectional (transmission of data can be in only one direction) or bi-directional (transmission of data can be in both directions).

In a shared bus, only one source can transmit data at one time while one or more than one can receive that signal. A bus that connects to all three components (CPU, memory, I/O components) is called a system bus. A system bus consists of 50-100 separate lines.

These kinds are broadly categorized into three
functional groups. Data lines, Address lines, Control
lines.
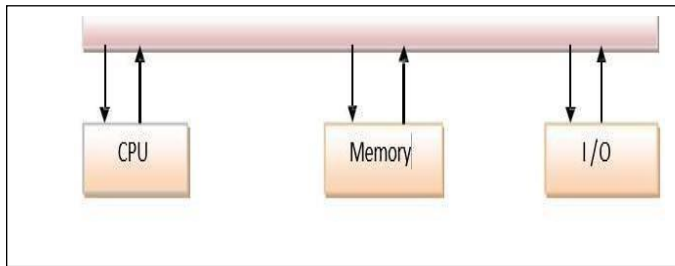
7. **With a neat diagram, explain the components of a computer system.**
   - Central Processing Unit (CPU) This unit performs the processing of instructions and datainside the computer.
   - Input Unit This unit accepts instructions and data.
   - Output Unit This unit communicates the results to the user
   - Storage Unit This unit stores temporary and final results.

Central processing unit (CPU) Central processing unit is the "administrative" section of the computer system. It interprets ~, coordinates the operations, and supervises the instructions. CPU works with data in discrete form, that is, either I or0.
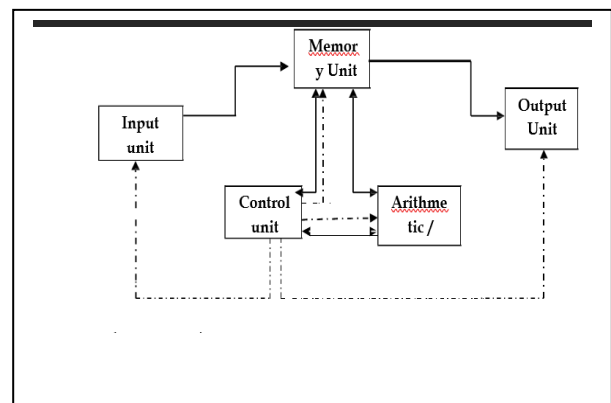The CPU itself has three parts:

Arithmetic Logic Unit (ALU)

Control Unit

Memory Unit

Input, Output, and Storage Units

An input unit accepts instructions and data from the user and communicates them to the computer.
Humans communicate with computers through input devices, and the computer can communicate with human beings using output devices. Some of the commonly used output devices are printers, monitors, and plotters.
The physical components or materials on which data is stored permanently are calledstorage units or devices. It supplies the stored information to the other units of the computer asand when required. Some common storage devices are floppy disks, hard disks, and tape drives.

8. **Illustrate the three main subsystems of the CPU.**

Arithmetic Logic Unit (ALU): This unit performs the arithmetical and logical operations on the stored numbers. The data is transferred from the memory unit to the arithmetic logic section, processed, and returned to internal storage. The results are transferred from internal storage to an output device.

Control Unit: This unit checks the correctness of the sequence of operations. It fetches the program instruction from the primary storage unit, interprets them, and ensures the correct execution of the program. It also controls the input/output devices and directs the overall functioning of the other units of the computer.

Memory Unit: This unit holds the intermediate results during the course of calculations and provides the data as and when required. This internal storage is also called primary memory or main memory. This memory takes the data from an input device and stores it until the computer is ready to process it. It also stores processed data and intermediate results. When the processing is finished, it transfers the results to an output device.

9. **With a neat diagram, Explain the memory hierarchy**
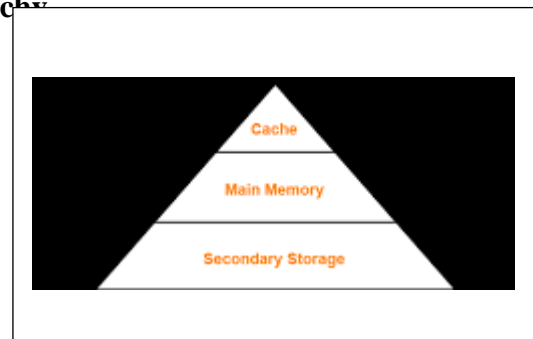
MEMORY HIERARCHY

The memory in a computer system is of three fundamental types:

- Internal Processor Memory This memory is placed in the CPU (processor). Internal memory usually includes cache memory and special registers, both of which can be directly accessed by the processor. This memory is used for the temporary storage of data and instructions on which the CPU is currently working. Processor memory is the fastest among all memory.
- Primary Memory (main memory) Random Access Memory (RAM) and Read Only Memory (ROM) fall in the category of primary memory. RAM is the place where the computer temporarily stores its operating system, application programs, and current data so that the computer's processor can reach them quickly and easily. It is volatile in nature. Unlike RAM, ROM is non-volatile.
- Secondary Memory(auxiliary memory) The most commonly used secondary Memory devices are hard disks, magnetic disks, and magnetic tapes. They have a much larger storage capacity than primary memory. Instructions and data stored on such storage devices are permanent in nature. Note that unlike processor memory and main memory, secondary memory is not directly accessible by the processor. Firstly, the information from secondary memory has to be shifted to the main memory and then to the processor.

10. **What are the various units, used to represent computer memory?**
The various units, used to measure computer memory, are as follows:
Bit: Bit is the basic unit of memory. It is the smallest unit of information on a machine and a single bit can hold only one of two values: 0 or 1.
Byte: A unit of eight bits is known as a byte. Hence, a byte can contain any binarynumber between 00000000 and 11111111.

Kilobyte (KB): In a binary system, kilo refers to1024. Therefore, a kilobyte is equal to1024 bytes.

Megabytes (MB): It comprises 1024 kilobytes. A megabyte can be thought of as amillion bytes. A megabyte is the standard unit of measurement for RAM.

Gigabyte (GB): A gigabyte consists of 1024 megabytes. It is the standard unit ofmeasurement for hard disks.

Terabyte (TB): The term terabyte refers to 1024 gigabytes of memory. Terabyte memoryis usually associated with supercomputers only.

11. **Explain the different generations of computers. First Generation (UsingVacuumTubes)**

The first generation of computers used vacuum tubes for circuitry and magnetic drums for memory. The input to the computer was through punched cards and paper tapes. The output was displayed as printouts.

The instructions were written in machine language

Second Generation (Using Transistors)

These machines were based on transistors technology. These were smaller as compared to the first generation of computers. Transistors allowed computers to become smaller, faster, cheaper, more energy-efficient, and more reliable. The second-generation computers used magnetic core technology for primary memory. They used magnetic tapes and magnetic disks for secondary storage. The input was still through punched cards and the output using printouts.

The instructions were written using assembly Language.

Third Generation (Using Integrated Circuits)

The third-generation computers used the Integrated Circuit (IC). An integrated circuit consists of a single chip (silicon) with many components such as transistors and resistors fabricated on it.

Instead of punched cards and printouts users interacted with third-generation computers through keyboards and monitors and interfaced with the operating system.

High-Level Languages were used extensively for programming

Fourth Generation (Using Microprocessors)

Fourth-generation computers are microprocessor-based systems. These computers are verysmall. Fourth-generation computers are the cheapest among all the other generations. Graphical User Interface (GUI). GUI is a user-friendly interface that allows users tointeract with the computer via menus and icons.

High-level programming languages are used for the writing of programs.

Fifth Generation(Using Artificial Intelligence)

Three characteristics can be identified with the fifth generation computers. These are,

1. Mega chips The fifth-generation computers use Super Large Scale Integrated (SLSI) chips that can store millions of components ona single chip.
2. Parallel processing results in faster processing speed. A computer using parallel processing accesses several instructions at once.

3. Artificial Intelligence (AI)They try to simulate the human way of thinking and reasoning.