Name of the chapter : **Introduction to Computer System**

Topic Covered

- Introduction to computer and computing: evolution of computing devices, components of a Computer System and their inter connections,Input/Output devices.
- Computer Memory: Units of memory,types of memory–primary and secondary,data deletion,its recovery and related security concerns.
- Software: purpose and types – system and application software, generic and specific purpose software

Key Points

Hardware:-Computer hardware refers to the physical components of a computer system, including the central processing unit (CPU), memory, storage devices, input devices (keyboard, mouse), output devices (monitor, printer), and other peripherals. It encompasses the tangible, electro-mechanical, and electronic elements that constitute a computer and enable its functioning.

Integrated Circuit:An Integrated Circuit (IC) is a compact assembly of interconnected electronic components, such as transistors, resistors, and capacitors, fabricated on a semiconductor substrate. This miniaturized arrangement enables the creation of complex electronic circuits, forming the basis of modern microprocessors, memory chips, and various electronic devices.

Input Devices:Computer input devices are hardware components that allow users to provide data and commands to a computer system. Examples include keyboards for typing, mice for pointing and clicking, and scanners for converting physical documents into digital form. These devices enable users to interact with and input information into the computer.

Output Devices:Computer output devices are hardware components that present or display processed information from a computer to the user. Examples include monitors for visual output, printers for producing hard copies of documents, and speakers for audio output. These devices convey the results of computations and operations performed by the computer.

Central Processing Unit:The Central Processing Unit (CPU) is the primary component of a computer responsible for executing instructions from programs. Acting as the "brain" of the system, it performs arithmetic and logic operations, manages data, and coordinates the functioning of other hardware components, crucial for overall computing functionality and speed. It consists of Arithmetic Logic Unit, Control Unit & Registers

Arithmetic Logic Unit: The Arithmetic Logic Unit (ALU) is a fundamental component of a computer's central processing unit (CPU) responsible for performing arithmetic and logical

operations on binary data. It executes tasks like addition, subtraction, AND, OR, and other operations, crucial for processing and manipulating information within the computer system.

Control Unit: The Control Unit is a critical component of a computer's central processing unit (CPU) that manages and coordinates the execution of instructions. It decodes program instructions, directs data flow within the CPU and between other system components, and controls the overall operation of the processor to execute tasks in a programmed sequence.

Memory: Computer memory refers to the electronic components that store data and instructions temporarily or permanently for processing by a computer. It includes RAM (Random Access Memory) for temporary storage and ROM (Read-Only Memory) for permanent storage. Memory is crucial for the execution and retrieval of information during computer operations.

Primary Memory:Primary memory, also known as main memory or RAM (Random Access Memory), is a volatile and fast-access computer storage that temporarily stores data and instructions for the CPU. It plays a critical role in actively running programs and allows quick access to information needed for ongoing computational tasks.

Secondary Memory:Secondary memory refers to non-volatile storage devices in a computer system, such as hard drives, solid-state drives, and external storage. Unlike primary memory (RAM), it retains data even when the power is off. Secondary memory is used for long-term storage of files, applications, and the operating system.

Registers:Memory registers are small, high-speed storage locations within a computer's central processing unit (CPU). They temporarily hold data and instructions that the CPU is actively processing. Registers play a crucial role in facilitating quick access to information and supporting the efficient execution of instructions during program operation.

Cache Memory:Cache Memory is a high-speed volatile computer memory located between the central processing unit (CPU) and main memory. It stores frequently accessed data and instructions to expedite retrieval, enhancing overall system performance by reducing the time it takes for the CPU to access frequently used information during program execution.

System Bus:The System Bus is a communication pathway that connects the major components of a computer system, facilitating data transfer between the central processing unit (CPU), memory, and peripheral devices. It comprises the **address bus**, data bus, and **control bus,** coordinating the flow of information within the computer architecture.

Data Deletion-It is the simple process of deleting a file and placing it into the Recycle Bin or Trash.

Data recovery-It is a process of retrieving deleted, inaccessible, lost, corrupted, damaged, or formatted data from secondary storage/ removable media .

Data security -It is the process of protecting corporate data and preventing data loss through unauthorized access.
Software -It is basically a set of instructions or commands that tell a computer what to do.
System Software-It is a program designed to run a computer's hardware and applications and manage its resources, such as its memory, processors, and devices.
Application Software-It is a type of computer program that performs a specific personal, educational, and business function.
Generic software- Generic software is a system designed for general public usage.
Specific software-It is software that is created for a specific purpose, organization, or individual.

30 Objective Question (1 Mark)	
Q1.	A computer is a/an ..... device. a) Mechanical b) Electrical c) Electronic d) Telecommunication
Ans	c) Electronic
Q2.	The physical components of the computer are known as a) Software b) Program c) Hardware d) Both A and C
Ans	c) Hardware
Q3.	Which of the following is not related to a personal computer: a) Processor b) Onboard c) Motherboard d) Keyboard
Ans	b) Onboard
Q4.	Which of the following is not a type of computer: a) Smart Phone b) Smart watch c) Biometric d) Tablet PC
Ans	c) Biometric

Q5.	Which type of PC is available in your school computer laboratory? a) IBM PC b) Macbook c) Chrome Book d) Tablet PC
Ans	a) IBM PC
Q6.	Full form of ALU is: a) Abacus Logarithmic Unit b) Arithmetic Logic Unit c) Abacus Language Unit d) Arithmetic Language Unit
Ans	b) Arithmetic Logic Unit
Q7.	Which of the following is a part of ALU? a) Arithmetic Unit b) Control Unit c) Logic Unit d) Both a) and c)
Ans	d) Both a) and c)
Q8.	First binary programmable computer based on Von Neumann architecture is: a) UNIVAC b) EDVAC c) ENIAC d) Mark I
Ans	c) ENIAC
Q9.	Arrange the following in increasing order of no of transistors on a single chip: i) SLSI ii) IC iii) VLSI iv) LSI a) i) SLSI ii) IC iii) VLSI iv) LSI b) ii) IC iii) VLSI iv) LSI i) SLSI c) ii) IC iv) LSI iii) VLSI i) SLSI d) iii) VLSI iv) LSI i) SLSI ii) IC
Ans	c) ii) IC iv) LSI iii) VLSI i) SLSI

Q10.	Which of the following is the fastest memory? a) RAM b) Cache c) ROM d) Hard Disk
Ans	b) Cache
Q11	Binary number system comprises of the digits: a) 1, 2 b) 0, 1 c) a, b d) i, ii
Ans	b) 0, 1
Q12	_____ is volatile i.e. as long as the power is supplied to the computer, it retains the data in it a) RAM b) CD c) ROM d) Hard Disk
Ans	a) RAM
Q13	Arrange the following units of memory in decreasing order of storage i) KB (Kilobyte) ii) GB (Gigabyte) iii) MB (Megabyte) iv) TB (Terabyte) a) iv) TB ii) GB i) KB iii) MB b) ii) GB iv) TB i) KB iii) MB c) iv) TB iii) MB i) KB ii) GB d) iv) TB ii) GB iii) MB i) KB
Ans	d) iv) TB ii) GB iii) MB i) KB
Q14	Which of the following is not an input device? a) Scanner b) Speakers c) Webcam d) Joystick
Ans	b) Speakers

Q15	_____ is an electronic pathway composed of cables which connects the major parts of a computer system a) Motherboard b) Processor c) Bus d) Cache
Ans	c) Bus
Q16.	Which of the following cannot be the reason for data deletion from HDD? a) Data lost due to shutting down the PC b) Hacker attacking the system. c) Bad sector in Hard Disk d) Accidentally deleting a file.
Ans	a) Data lost due to shutting down the PC
Q17.	Which of the following is not a data recovery software? a) Recuva b) EaseUS c) Disk Drill d) Matlab
Ans	d. Matlab
Q18.	In which of the scenario do we need to recover data? a) When disk is full. b) When system performance has become slow. c) When a photo or video has been accidentally deleted. d) All of the above
Ans	c) When a photo or video has been accidentally deleted.
Q19.	Which of the following is an example of Proprietary software? a) Linux b) Windows c) Mozilla Firefox d) None of the above
Ans	b) Windows
Q20.	Cryptographic utilities are used to _____ files to prevent unauthorized users. a) Encrypt b) Decrypt c) Both of these d) None of thse
Ans	c) Both of these
Q21.	Operating System is an example of a) System software b) Utility program c) Application software d) None of the above
Ans	a) System software

Q22.	_____ is a software that can be freely downloaded and even distributed to others. a) Open source software b) Liteware c) Shareware d) Freeware
Ans	d) Shareware
Q23.	Word processing and desktop publishing are the examples of a) Hardware b) Software c) CPU d) None of these
Ans	Software
Q24.	The full form of OSS is _____ a) Operating system software b) Operating source software c) Open system software d) Open source software
Ans	d) Open source software
Q25.	An antivirus software is an example of _____ a) System software b) Pirated software c) Freeware d) Utility software
Ans	d)Utility software
Q26	_____ is designed to solve a specific problem or to do a specific task. a) System software b) Utility software c) User d) Application software
Ans	d) Application software
Q27	Which of the following is not a feature of a compiler? a) Execution time is more b) When all the syntax errors are removed execution takes place c) Scans the entire program first and then translate it into machine code d) Slow for debugging
Ans	a) Execution time is more
Q28	Which of the following is not an example of system software? a) Language Translator b) Utility Software c) Communication Software d) Word Processors
Ans	e) Word Processors

Q29	What is the process of deleting all the data on the hard drive? a) Delete b) Erase c) Formatting d) Uninstall
Ans	c) Formatting
Q30	A general purpose software is a type of _____ a) System software b) Database software c) Package software d) Application software
Ans	e) Application software
10 Assertion and reason Based question (1 Mark)	
Q1.	**Assertion (A):** Computers use binary code (0s and 1s) to represent and process data. **Reason (R):** Binary code is the fundamental language of computers, where 0 represents OFF and 1 represents ON in the context of electronic switches.
Ans	Both A and R are true and R is the correct explanation for A.
Q2.	**Assertion (A)**: Main/Primary memory is volatile. **Reason (R)**: ROM which is a part of main memory is non-volatile.
Ans	A is False but R is True.
Q3.	**Assertion (A)**: The CPU (Central Processing Unit) is often referred to as the "heart" of the computer. **Reason (R)**: The CPU is responsible for executing instructions and performing calculations, similar to the human heart's processing capabilities.
Ans	A is False but R is True.
Q4.	**Assertion (A)**: RAM (Random Access Memory) is volatile memory. **Reason (R)**: RAM retains its data even when the computer is powered off.
Ans	A is True but R is False.
Q5.	**Assertion (A)**: A scanner is an output device that produces hard copies of digital documents. **Reason (R)**: Scanners use sensors to capture images or text from paper documents, making them available for digital processing and storage.
Ans	A is False but R is True.
Q6.	Assertion : It is always good to keep the passwords encrypted while storing. Reason : Encrypted data cannot be easily stolen by hackers.
Ans	Both A and R are true and R is the correct explanation for A

<table>
<tr><td>Q7.</td><td>Assertion : Windows 10 is a system software.
Reason : The software that protects a computer system from computer virus is system software</td></tr>
<tr><td>Ans</td><td>A is True but R is False.</td></tr>
<tr><td>Q8.</td><td>Assertion : Not all types of software are system software.
Reason : Application software are designed to carry out operations for a specific application.</td></tr>
<tr><td>Ans</td><td>Both A and R are true and R is the correct explanation for A</td></tr>
<tr><td>Q9.</td><td>Assertion : A software designed for a bank will work only for the account holders of that bank.
Reason: Customized software are tailor made software according to user requirements.</td></tr>
<tr><td>Ans</td><td>Both A and R are true and R is the correct explanation for A</td></tr>
<tr><td>Q10.</td><td>Assertion : A system software is also called as a manager.
Reason: Utility software assists the computer in maintaining it’s performance.</td></tr>
<tr><td>Ans</td><td>Both A and R are true but R is not the correct explanation for A</td></tr>
<tr><td colspan="2">10 Short Knowledge/Understanding/Application Based Questions (2 Marks)</td></tr>
<tr><td>Q1.</td><td>Differentiate between RAM and ROM.</td></tr>
<tr><td>Ans</td><td>.<table><tr><td></td><td>RAM</td><td>ROM</td></tr><tr><td>i)</td><td>Full form is Random Access Memory</td><td>Full form is Read Only Memory</td></tr><tr><td>ii)</td><td>RAM is volatile memory that temporarily stores the files you are working on.</td><td>ROM is non-volatile memory that permanently stores instructions for your computer.</td></tr></table>.</td></tr>
<tr><td>Q2.</td><td>Where is cache memory located and what is its use?</td></tr>
<tr><td>Ans</td><td>Cache memory is located on the CPU itself or very close to it, typically on the same chip as the CPU.
The primary purpose of cache memory is to store frequently accessed data and instructions, providing the CPU with faster access to this information than fetching it from the main memory (RAM).</td></tr>
<tr><td>Q3.</td><td>List out two arithmetic and two logical operators</td></tr>
<tr><td>Ans</td><td>Arithmetic operators: + – * /
Logical operators: > ,< , >= , <=, = , !=</td></tr>
<tr><td>Q4.</td><td>Where registers are located and what are their uses?</td></tr>
<tr><td>Ans</td><td>Registers are located inside the central processing unit (CPU), and they are the smallest, fastest, and most accessible form of memory within a computer.</td></tr>
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<table>
<tr><td></td><td>CPU uses registers to either hold processing information or to store some part of data or some memory address or some instructions.</td></tr>
<tr><td>Q5.</td><td>What is the function of Control Unit in a CPU?</td></tr>
<tr><td>Ans</td><td>The functions of control unit are:
i) It controls instruction execution.
ii) It guides the interpretation, flow and manipulation of data.</td></tr>
<tr><td>Q6.</td><td>Deleting digitally stored data means changing the details of data at bit level, which can bevery time consuming. Therefore, when any data is simply deleted, its address entry ismarked as free, and that much space is shown as empty to the user, without actuallydeleting the data.
In case data gets deleted accidentally or corrupted, there arises a need to recover thedata. Recovery of the data is possible only if the contents/memory space marked asdeleted have not been overwritten by some other data.
i) Can you recover the data once deleted? Justify
ii) Give any one security threat involved when we throw away electronic gadgets that are non-functional.</td></tr>
<tr><td>Ans</td><td>i) Yes, by Data Recovery. Data recovery is a process of retrieving deleted, corrupted and lost data from secondary storage devices.
ii) ii) If these storage devices fall into the hands of mischief-mongers, they can easily 1 recover data from such devices; this poses a threat to data confidentiality.</td></tr>
<tr><td>Q7.</td><td>What are the two main categories of system software?</td></tr>
<tr><td>Ans</td><td>The two main categories of system software are:
a) Operating system- It is a program which acts as an interface between the user and the hardware.
b) Language processor- It is responsible for converting a High level code to machine language.</td></tr>
<tr><td>Q8.</td><td>What is data deletion? How does it work?</td></tr>
<tr><td>Ans</td><td>Data deletion is the process where the data is deleted from the system either accidentally or intentionally.
Deleting stored data means changing the details of data at bit level, which can be very time consuming. Therefore when any data is simply deleted it’s address entry is marked as free, and that much space is shown empty to the user.</td></tr>
<tr><td>Q9.</td><td>What is the difference between system software and application software.</td></tr>
<tr><td>Ans</td><td>
<table>
<tr><td>System Software</td><td>Application software</td></tr>
<tr><td>System software is mainly designed for managing system resources.</td><td>Application softwareis mainly designed to accomplish tasks for specific purposes.</td></tr>
<tr><td>Programming of system software is complex.</td><td>Programming of application software is comparatively easy.</td></tr>
<tr><td>A computer cannot run without system software.</td><td>A computer can easily run without an application software.</td></tr>
<tr><td>System software do not depend on application software.</td><td>Application software do depend on system software.</td></tr>
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Q10. What is the difference between customized software and generic software.

Ans

Customized software	Generic software
Designed for a specific user's or organization's needs.	Designed for a broad range of users with general needs.
Specific maintenance and support required.	Standard maintenance and support required.
Longer development time required to meet all the needs.	Shorter development time required.

10 Short Knowledge/Understanding/Application Based Questions (3 Marks)

Q1. What is the IPO cycle in a computer?

Ans

The IPO cycle, which stands for Input-Processing-Output cycle, is a fundamental concept in computer science and information processing. It describes the sequence of operations that a computer follows to process data and produce results.

Here's an overview of each phase in the IPO cycle:

- Input: In this phase, data or information is collected from external sources or input devices, such as keyboards, mice, sensors, or storage devices like hard drives and network connections. Input can be in the form of text, numbers, images, sound, or any other data type.
- Processing: In the processing phase, the computer performs various operations on the input data. This can include calculations, transformations, comparisons, sorting, filtering, and executing instructions specified by software programs.
- Output: After processing, the computer generates results or output data. Output can take various forms, such as displaying information on a screen, printing a document, saving data to storage, sending data over a network, or producing sound through speakers.

Q2. List out at least three differences difference between cache memory and registers in a computer?

Ans

	Cache Memory	Registers
i)	Cache memory offers fast access times but is slower than registers	Registers are the fastest form of memory in a computer, with almost instant access times.

	ii)	Cache memory is located between the CPU and the main memory. It can be on the CPU chip itself.	Registers are part of the CPU's architecture and are located directly on the CPU chip.
	iii)	Cache memory is used to store frequently accessed data and instructions from the main memory, optimizing overall system performance by reducing memory latency.	Registers are used for temporary storage of data and instructions that are actively being processed by the CPU. They are crucial for executing instructions and performing calculations.

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Q3.	Write the full forms of the following: SMPS USB CRT UPS BIOS PROM
Ans	SMPS → Switched-Mode Power Supply USB → Universal Serial Bus CRT → Cathode Ray Tube UPS → Uninterruptible Power Supply BIOS → Basic Input Output System PROM → Programmable Read-Only Memory
Q4.	Mr Rakesh has eleven CDs each of capacity 700 MB containing MP3 songs of legendary singers of Bollywood. After few years he discovers that the CDs are becoming corrupt. So he wants to transfer the songs to a pen drive for keeping them. How much minimumcapacity pen drive should he purchaseif pen drives are available in 2 GB, 4 GB, 8 GB and 16 GB sizes?
Ans	Capacity of 1 CD=700 MB Capacity of 11 CDs=700*11=7700 MB 1024 MB = 1 GB So no of GB in 7700 MB=7700/1024=7.5 GB Hence Mr.Rakesh should purchase a 8 GB pendrive to transfer the songs in the 11 CDs.

<table>
<tr><td>Q5.</td><td>Write at least three differences between keyboard and mouse.</td></tr>
<tr><td>Ans</td><td>
<table>
<tr><th></th><th>Keyboard</th><th>Mouse</th></tr>
<tr><td>i)</td><td>A keyboard is primarily used for entering text, numbers, and various commands. It is the primary input device for typing and text-based input.</td><td>A mouse is primarily used for pointing, selecting, and interacting with graphical elements on the computer screen. It provides precise cursor control.</td></tr>
<tr><td>ii)</td><td>Users interact with a keyboard by pressing physical keys, each of which corresponds to a specific character or function.</td><td>Users move a physical mouse on a flat surface, and the movement is translated into corresponding on-screen cursor movements. Mice have buttons for clicking and scrolling wheels for navigating content.</td></tr>
<tr><td>iii)</td><td>Keyboards are commonly used for word processing, data entry, programming, web browsing, and executing keyboard shortcuts.</td><td>Mice are commonly used for navigating graphical user interfaces, selecting files and icons, gaming, graphic design, and web browsing.</td></tr>
<tr><td>iv)</td><td>Keyboards offer a range of keyboard shortcuts for various functions, making them efficient for tasks like copying, pasting, saving, and undoing actions.</td><td>Right-clicking with a mouse opens context menus, providing quick access to various options and actions related to the selected item.</td></tr>
</table>
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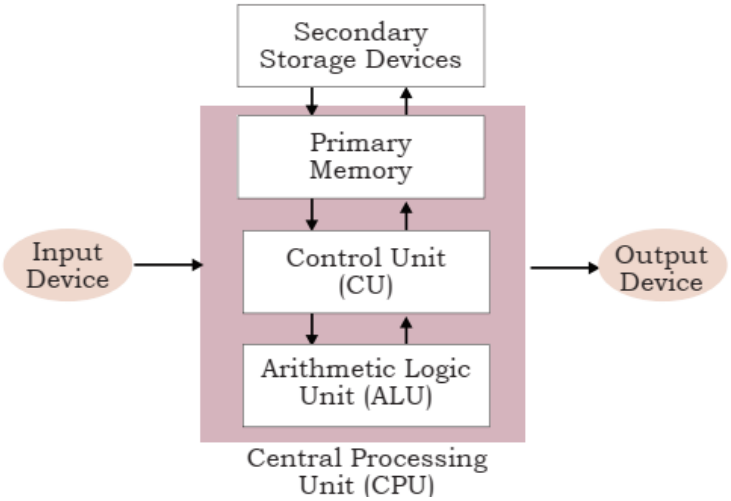
</td></tr>
<tr><td>Q6.</td><td>Suman has discarded old, broken and malfunctioning Hard Disk without taking care to delete data. Is it harmful in respect of security concern? Justify your answer.</td></tr>
<tr><td>Ans</td><td>Yes, as it invites hackers/malware to see through your data. (Knowledge)
(1 mark to be awarded for yes/no and 2 mark for the correct justifications).</td></tr>
<tr><td>Q7.</td><td>What is a data backup software? How can it help in data recovery?</td></tr>
<tr><td>Ans</td><td>Data backup software is a software whose primary function is to copy and save the data to an external source. This could be either a drive, server, data centre, or the cloud.
The main role of backup and recovery is to preserve critical data in case of loss or damage. In case of a disaster — natural or manmade including a ransomware attack the backed up data can be retrieved and restored.</td></tr>
</table>

Q8.	Give three techniques to prevent accidental file deletion.
Ans	Three popular techniques to prevent accidental file deletion are as follows: a) We can configure the Permissions Settings to allow us to grant or deny file access to other users. b) we can simply hide the files from the file properties option. c) We can password protect the file using third party software.
Q9.	Why is operating system also called a resource manager?
Ans	a) The OS manages these resources and allocates them to particular programs. b) The CPU is one kind of resource and the OS decides how much processor time should be given for the execution of a particular program. c) OS also manages memory and I/O devices when multiple users are working simultaneously.
Q10.	What is an OSS? How is OSS different from FOSS.
Ans	Open source software is software developed and maintained by open collaboration, and made available, typically at no cost, for anyone to use, examine, alter and redistribute however they like. Open Source Software refers to software whose source code is available to customers while FOSS is a software that is both free software as well as open-source software. (2 marks for correct definition and 1 mark for difference)
10 Short Knowledge/Understanding/Application Based Questions (4 Marks)	
Q1.	Modern computers are based on Von Neumann Architecture. What does Von Neumann Architecture comprise of?
Ans	Von Neumann architecture comprises of: i) Central Processing Unit ii) Memory to store data and programs iii) Input and output devices iv) Communication channels to send/receive the output data
Q2.	Draw the block diagram of a computer system. Briefly write about the functionality of each component.
Ans	 Block diagram of a computer system.

<table>
<tr><td></td><td>Three components of computer are:
Central Processing Unit (CPU),
Input Devices,
Output Devices
Central Processing Unit: It is the brain of the computer system. It broadly comprises of Arithmetic Logic Unit(ALU) and Control Unit(CU). ALU is responsible for performing the various Arithmetic operations and Logical operations on integers. CU is responsible for controlling all the activities which are performed inside the computer system.
Input Devices: They accept data from the user or outside the environment. It sends data & instructions in binary form to the computer for further processing. Example: keyboards, mouse, scanners etc.
Output Devices: They receive data or information from memory. This data is converted into human readable format and shown to the user.Example: Monitor, Printer etc.</td></tr>
<tr><td>Q3.</td><td>List out four differences between RAM and Hard Disk.</td></tr>
<tr><td>Ans</td><td>.<table><tr><td></td><td>RAM</td><td>Hard Disk</td></tr><tr><td>i)</td><td>It is a type of Primary Memory</td><td>It is a type of Secondary Memory</td></tr><tr><td>ii)</td><td>RAM is volatile memory that temporarily stores the files you are working on.</td><td>Hard Disk is non-volatile memory that permanently stores data or instructions for your computer.</td></tr><tr><td>iii)</td><td>RAM has higher speed than Hard Disk</td><td>Hard Disk has lower speed than RAM</td></tr><tr><td>iv)</td><td>Cost of per unit memory is more in RAM</td><td>Cost of per unit memory is less in Hard Disk</td></tr></table>.</td></tr>
<tr><td>Q4.</td><td>What was the basic electronic component of:
1st Generation of Computers
2nd Generation of Computers
3rd Generation of Computers
4th Generation of Computers</td></tr>
</table>

Ans	1st Generation of Computers mostly comprised of vacuum tubes 2nd Generation of Computers mostly comprised of transistors 3rd Generation of Computers mostly comprised of integrated circuits 4th Generation of Computers mostly comprised of VLSI circuits
Q5.	Define the following terms in relation to computers: a) Booting b) BIOS c)POST d) CMOS
Ans	a) Booting The booting process in a PC (Personal Computer) is the sequence of events that occurs when you turn on the computer to start the operating system (OS). It involves the computer's hardware and firmware working together to load the OS into memory, allowing the computer to become functional. b) BIOS BIOS (Basic Input/Output System) is firmware that serves as the computer's system software. Its primary role is to initialize the hardware and provide the initial software environment for the boot process. BIOS configures critical hardware settings, such as the system clock, CPU parameters, and boot device order. It locates the bootable device (e.g., a hard drive or SSD) based on the boot order specified in BIOS settings. c)POST The BIOS built into the motherboard's ROM (Read-Only Memory) chip initiates a Power-On Self-Test (POST). During POST, the BIOS checks the hardware components (CPU, RAM, storage devices, graphics card, etc.) to ensure they are functioning correctly. Any detected issues are reported via beep codes or error messages. d) CMOS CMOS stands for Complementary Metal-Oxide-Semiconductor. CMOS technology is a semiconductor technology used to manufacture integrated circuits, and it is particularly known for its low power consumption. In the context of personal computers, the term "CMOS" is commonly associated with the CMOS battery, which powers the CMOS chip on the motherboard and maintains vital system settings and the system's real-time clock when the computer is turned off.
Q6.	Give two reasons for data deletion. How can data deletion from unauthorized persons be prevented?

<table>
<tr><td>Ans</td><td>The reasons for data deletion are as follows:
a) The storage device can malfunction or crash down leading to data loss.
b) Users can accidentally erase data from storage devices.
(1 mark each for any other reason of deletion)
Data deletion from unauthorized persons can be prevented by:
a) Limiting access to the computer system by using passwords.
b) Keep files encrypted to prevent it from unwanted modification.
(1 mark each for any other correct answer)</td></tr>
<tr><td>Q7.</td><td>Give two similarities and two differences between a compiler and interpreter.</td></tr>
<tr><td>Ans</td><td>Two similarities between compiler and interpreter are:
a) Both compiler and Interpreter are language translators.
b) Both compiler and interpreter are used to find errors in the source code and debug them.
Differences are as follows:
<table>
<tr><td>Compiler</td><td>Interpreter</td></tr>
<tr><td>It takes the entire program in one go.</td><td>An interpreter takes a single line of code at a time.</td></tr>
<tr><td>The compiler generates an intermediate machine code.</td><td>The interpreter does not produce an intermediate machine code.</td></tr>
<tr><td>The compiler is used by programming languages such as C,C++,Java etc.</td><td>The interpreter is used by programming languages such as Python, Ruby etc.</td></tr>
</table></td></tr>
<tr><td>Q8.</td><td>Give four major functions of an operating system.</td></tr>
<tr><td>Ans</td><td>a) Allocates and deallocates the memory and it keeps a record of which part of primary memory is being used by which process.
b) When more than one process runs on the system the OS decides how and when a process will use the CPU.
c) It keeps records of the status and locations of files and allocates and deallocates resources.
d) An operating system regulates device connection using drivers. The processes may require devices for their use.</td></tr>
<tr><td>Q9.</td><td>Give four techniques to prevent loss of data due to security reasons.</td></tr>
<tr><td>Ans</td><td>a) Backing up the Data-It is always good to have a backup strategy or several backups of the company’s data.
b) Encrypt Sensitive Data-Encryption makes it exceedingly difficult for an unauthorized individual to comprehend or use stolen data.
c) Use SoftwareAnti-virus and anti-malware software protects our system from programs that can wipe out data or from threats that can block access to our critical files.
d) Having a Password Policy: Creating and enforcing a password policy makes it more challenging for a bad actor to crack employees’ passwords and get into your system.</td></tr>
<tr><td>Q10.</td><td>What is language translator? Mention the three main types of language translators.</td></tr>
<tr><td>Ans</td><td>A language translator is a program that converts source code into object code.
Generally, there are three types of translator:
Compiler: A compiler takes the source code as a whole and translates it into object code all in one go.
Interpretor: An interpreter translates source code into object code one instruction at a time.
Assembler: an assembler converts assembly level language code into machine language code.</td></tr>
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07 Case Based Questions (5 Marks)	
Q1.	Ramesh wants to purchase a new PC. He is trying to choose a PC within his budget which will work fast. Which of the following components are compulsory and which are optional and explain why? a) Scanner b) Keyboard c) Printer d) Monitor e) Mouse
Ans	a) A scanner is **not essential** for the working of a PC. In future if Ramesh has to scan documents or pictures regularly, he may buy it. b) A computer keyboard is an **essential** input device used to enter characters and functions into the computer system by pressing buttons, or keys. It is the primary device used to enter text. A keyboard typically contains keys for individual letters, numbers and special characters, as well as keys for specific functions. c) A printer is **not essential** for the working of a PC. However if Ramesh frequently needs hard copies of various documents from PC, he may buy it in future. d) A computer monitor is an **essential** and mainoutput device for a PC. The primary use of a monitor is to display images, text, video, and graphics information generated by the computer via a computer's video card. e) A mouse is an **essential** input device used to point at objects you see on the screen. By pointing at an object, you tell the computer that you want to do something with that object. For example, say you wanted to start a program. There's a small picture, called an icon, on the computer screen that represents that program.
Q2.	Sweta has recently installed new software on her 1 year old laptop after which the speed of the laptop has become quite slow. She is confused regarding which of the following must be upgraded for better speed. Help her to understand the role of each of the following components and which of them will ultimately improve the speed of the laptop. a) Hard Disk b) ROM c) RAM d) Processor e) Network

Ans	a) Since laptop was working properly and the hard disk is relatively new, there is no need to upgrade the hard disk. b) ROM contains the programming that allows a computer to start up or regenerate each time it is turned on. So the ROM is also not the cause of the problem. c) Generally, the faster the RAM, the faster the processing speed. Since the laptop has become slow after installation of a new software, there is a possibility that the new software needs more RAM for smooth working of the laptop. Hece RAM must be upgraded. d) A processor also affects the speed of a laptop. But since the laptop was functioning properly till recently and the laptop and itsprocessor being new, there is no need to upgrade the processor. e) A network has nothing to do with the speed of the laptop. Its role is only to transfer files from one laptop to other.
Q3.	Classify on which the following areas computers have a positive or negative impact. Justify your answer with suitable reason. a) Accuracy b) Speed c) Health d) Employment e) Social Relations
Ans	a) Accuracy of calculations have been greatly enhanced by computers. Computers are machines which can repeatedly do calculations with consistent accuracy. b) Speed of doing various tasks have improved due to high processor speeds of a computer. c) Health of human beings often adversely affected due to working for long hours on a computer. Improper postures can cause back, neck and shoulder pains, headache, eye strain and overuse injuries of the arms and hands.You can help avoid computer-related injuries with proper furniture, better posture and good working habits. d) Computer has led to reduction of employment opportunities for unskilled workers whereas it had given rise to ample opportunities for skilled manpower. e) On one hand people are becoming lonelier due to less time for interpersonal relationships. On the other hand people areSocializing more using social platforms. Hence to an extent computers are helping people to socialize more.

Q4.	Anisha was in the middle of a typing a letter in Microsoft Word when suddenly power went off. a) Do you think she will get back the entire text she had typed in the letter. b) If not what is the reason? c) What would you suggest her to not face the problem again? d) Can you suggest any device to prevent the above problem? e) Which is better a writeable DVD or an external hard disk for long term storage?
Ans	a) I don't think she will be able get back the entire letter. b) Because the latest portions of the letter which was being typed was on the RAM which being volatile loses its data as soon as power is switched off. c) She should continuously save the work after every few moments. d) She must use a UPS to avoid this type of data loss. e) An external HDD will last longer than a writable DVD.
Q5.	Sunil is a student of fine arts and wants to draw a potrait which he has to send someone by email. a) Do you think he should draw it on canvas and scan the image or can he draw it on a PC? Which one is better if he knows how to draw on a PC? b) Can a touchscreen make his work easier? c) If he cannot afford a touchscreen, suggest him a suitable input device for drawing theportrait. d) He manages to draw a portrait but is unable to determine what type of printer should be used. Suggest him a suitable printer along with the reason. e) Do you think a separate graphics card is essential for drawing in a PC.
Ans	a) Considering above scenario it will be better to draw on a PC because we can repeatedly modify the portrait in the PC until he is satisfied. On the other hand the same will not be possible on the canvas. b) Yes a touchscreen can serve as a digital tablet and make work easier for an artist. c) He will need compatible a digital pen and stylus if he doesn't have a touchscreen. d) He should use a plotter as it gives him the flexibility to print in various sizes on various media. e) No graphics card is not essential for drawing. However a graphics card can offload work and reduce memory-bus-contention from the CPU and system RAM, therefore the overall performance for a computer could improve in addition to increased performance in graphics processing.

Q6.	Mr Samrat is a data recovery expert at ABC Computer Pvt limited company. He has been assigned the task to keep the data in every system safe and protected from unauthorized personnel. i) Which among the following methods should he use to keep the company's data safe from outsiders a) Install a disk backup software b) Set password to authenticate users at the time of login c) Perform boot time scan of the system d) All the above. ii) Which of the following is a sign that the data in removable disk is corrupted? a) Files in removable disk are opening slowly. b) System is taking more time to open. c) Files in removable disk could not be read. d) None of the above iii) A user in his company has mistakenly deleted a file. How can he get back the file? a) By creating the file once again. b) By restoring it from the recycle bin. c) By searching for the file in drives of the system d) None of the above. iv) Mr Samrat notices that whenever a pen drive is connected in his system all files and folders in it become hidden. What could be the possible reason for it? a) Operating system has become corrupted. b) File explorer is not working properly. c) Pen drive has become faulty. d) There may be a malware in the pen drive or system. v) Which software would you suggest to increase the performance of the hard disk. a) Disk Cleaner b) Anti Virus c) Disk Boost d) Disk Defragmenter
Ans	i) b) Set password to authenticate users at the time of login ii) c) Files in removable disk could not be read. iii) b) By restoring it from the recycle bin. iv) d) There may be a malware in the pen drive or system. v) d) Disk Defragmenter
Q7.	Mrs Sunita wants to buy a laptop for her personal work. She is a teacher in Indira Public School. She has searched in the internet and she found two laptops with the same configuration. One with DOS version and another with pre loaded Windows. 1.Why is the price of the pre loaded Windows system more than the DOS version? a) DOS version is not user friendly. b) DOS version does not support installing other software. c) In pre-loaded Windows system an OS is already installed and it's cost is included. d) None of the above.

	2. Which software she needs to install in the DOS version? a) Utility software b) Application software c) Operating system d) None of the above. 3. She wants to install software for spread sheet work. Suggest a suitable software for her. a) MS Excel b) MS Word c) MS Power Point d) All the above 4. Which software among the following should she update to protect her system from virus? a) Windows Media Player b) Windows Defender c) MS Office d) None of the above 5. She wants to use the internet for surfing content. Which among the following would be the most suitable software for it. a) Internet Explorer b) Mozilla Firefox c) Google Chrome d) All the above
Ans	1. c) In pre-loaded Windows system an OS is already installed and it's cost is included. 2. c) Operating system 3. a) MS Excel 4. b) Windows Defender 5. d) All the above