**What is Computer? Differentiate between Analog and Digital Computer. 1 + 4 = 5 marks**

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**Explain the concept of RAM and Cache Memory. Write the types of cache Memory.**

**RAM (Random Access Memory)**  
RAM is a volatile memory that stores data and instructions that are currently executed by the CPU.  
*Example:* 8 GB of DDR4 RAM in Computer

**Features**

1. It is volatile, which means the data is lost when the computer is turned off.
2. Larger capacity compared to Cache Memory.
3. Cheap as compared to Cache Memory.

**Cache Memory**  
Cache memory is small, high-speed memory located near the CPU. It stores frequently accessed data and instructions. It is designed to make processing speed faster by reducing CPU reliance on main memory.  
*Example:* L1, L2, and L3 cache within a CPU

**Features**

1. It is volatile memory.
2. Small capacity compared to RAM.
3. Expensive.

**Types of Cache Memory**

1. **Level 1 (L1) Cache**
   * Located directly on the CPU chip.
   * Smallest and fastest cache level.
   * Stores data that is most frequently accessed by the CPU.
2. **Level 2 (L2) Cache**
   * Can be located on the CPU or near it (on the motherboard).
   * Larger than L1 cache but slower.
   * Stores less frequently accessed data than L1 Cache.
3. **Level 3 (L3) Cache**
   * Largest than L1 and L2 and slower.
   * Shared among multiple cores.

**What is control panel in windows operating system? List down the tasks that you can perform through control panel. 5 marks**

Control panel in windows

The control panel is a centralized interface in windows operating system that allows users to manage and configure various settings of the computer. It provides access to a wide range of tools for the system customization, hardware manages, and software configuration.

Task you can perform through control panel

**What is operating system? Describe its functions and classifications.**

Classification => Types of Operating system

**What is BIOS? Explain the major features and settings available int the BIOS. 5 marks**

BIOS (Basic Input/Output System) is a firmware integrated on the motherboard ROM chip that initializes the hardware component and provides the necessary instructions to boot the system. BIOS checks the hardware component (RAM, CPU, storage device, other) and hand over control to the operating system.

**Major Features and Settings of BIOS**

1. **Boot Sequence**
   * BIOS decides which device the computer starts from (such as hard drive, USB, or network device).
   * Boot allows choosing between modern (UEFI) or older (legacy) startup methods.
2. **System Configuration**
   * Allows configuring hardware settings like boot priority, clock speeds, and storage modes.
3. **Hardware Configuration**
   * Runs POST (Power-On Self-Test) to verify hardware components (RAM, CPU, Storage devices) are functioning properly.
4. **Power Management**
   * BIOS supports energy-saving modes like turning off unused parts of the system (such as the screen or hard drive) when the computer is idle.
5. **Security Settings**
   * Enables setting up system passwords to protect against unauthorized access.

**Differentiate between firmware and cache memory.**

**What is the difference between RAM, ROM, Cache Memory? 5 marks**

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**What are the different types of system tools provided by the windows OS for improvement of system performance? Explain. 5 marks**

Windows OS provides a variety of system tools to improve system performance. Below are some of the key system tools:

**1. Task Manager**

* **Purpose**: Monitors system resources like CPU usage, memory usage, disk activity, and network activity.
* **How it Improves Performance**: Allows users to identify and terminate unnecessary or resource-heavy applications.

**2. Disk Cleanup**

* **Purpose**: Removes unnecessary files such as temporary files, system files, and downloaded program files.
* **How it Improves Performance**: By freeing up disk space, it can improve system responsiveness.

**3. Disk Defragmenter**

* **Purpose**: Rearranges fragmented data on the hard drive.
* **How it Improves Performance**: Improves disk read/write speed.

**4. System Configuration (msconfig)**

* **Purpose**: Allows users to manage startup applications, boot settings, and services that run during system startup.
* **How it Improves Performance**: By disabling unnecessary services, the boot time is reduced.

**5. Windows Defender**

* **Purpose**: Protects the system from malicious activities.
* **How it Improves Performance**: Prevents the system from slowing down due to malware or malicious software.

**What do you mean by system tools in operating system? Briefly explain about disk defragmenter and restore tools of Windows OS. 1 + 4 marks**

System Tool in operating system

System tool in an operating system refers to built-in applications that help in managing, maintaining and optimizing the computer system. These tools help users to perform tasks like file management, disk optimization, system performance monitoring, and troubleshootin. Common example of system tools includes Disk defragmenter, backup and restore and other.

Disk Defragmenter in windows OS:

The disk defragmenter is a system utility application in windows OS that help in rearranging fragmented data on the hard drive to improve disk read/write speed.

Issues:

When files are saved on a hard disk, they can become fragmented, meaning file split into small pieces, and stored in different locations on the disk. Over time, this fragmentation can lead to slower read/write speed because the hard drive read/write head has to move around more to access the data.

How it fixes it:

The disk defragmenter scans the hard disk and gathers scattered fragments of file, then rearrange them and stored in next to each other. This helps to access data more quickly.

Restore Tools in windows OS

The restore tools is a system utility application in windows OS that help to restore system settings and files to a previous state.

Windows OS provides several restore tools, including:

System Restore: Over time, OS may face issues due to software issues, drivers update, or system errors. This causes the system malfunction. System restore helps to restore the computers setting to a previous state, without affecting personal files.

File History: This feature automatically backups your files to an external drive or remote server. If you accidentally delete a file or it becomes corrupted, you can restore it from the backup.

**What do you mean by DBMS? Write down the features of DBMS in data management and security. 5 marks**

Data Management Features

1. Data Integrity
2. Data Manipulation
3. Transaction Management

Data Security Features

1. Data Security
2. Data Backup and Recovery
3. Data Encryption: Secure sensitive data by encrypting it to prevent unauthorized access.

**Define IP Address and subnet mask in computer networking. How do you find the IP address and subnet mask of your computer and network? 5 marks**

**Finding IP Address and Subnet Mask**

**On Windows:**

1. Open the **Command Prompt**.
2. Type ipconfig and press Enter.
3. Look for the network adapter (e.g., Ethernet, or Wi-Fi).
4. The IP Address and subnet mask will be listed below the active network adapter.

**On Kali Linux:**

1. Open the **terminal**.
2. Type ifconfig and press Enter.
3. Look for the **inet** (IP Address) and **netmask** listed under the active network interface.

**Router’s Web Interface:**

1. Log into the router’s admin panel (usually via 192.168.0.1 or 192.168.1.1 in a browser).
2. Navigate to the **Network Settings**.
3. Look for the IP Address and subnet mask assigned to devices.

**Write short note on Phishing attacks. 2.5 marks**

Definition of Phishing Attack

Phishing attack is a type of cyber-attack where attackers’ tricks users to reveal sensitive information (such as login credential, credit card details, bank account information or other important data) by pretending to be trustworthy.

Example: A fake email that looks like it came from a bank, asking users to click link and enter login credentials.

Diagram:

A diagram of a computer virus

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**Write short note on Identity Access Control. 2.5 marks**

Identity and access control is a security process that ensures only authorized users or system can access specific resources (such as database, networks, other resources)

It involves the following key components

**Identify Verification:** This process involves identifying and authenticating users, through methods like passwords, biometrics, or tokens.

Example: A user logs into their banking mobile app using a fingerprint scan and one-time passcode sent to their phone. This two-step verification ensures that both the user and their device are authorized to access the account.

**Access control:** This process determines the level of access granted to each user based on their roles and permissions. It ensures that user can only access the resources they are authorized to use.

Example: In a company internal system, an employee in the financial department can access transaction reports, while an employee in IT department can only access server’s room. This ensures that each user can only view data relevant to their role, preventing unauthorized access to sensitive information.

**Explain the generation of computer with key features of every generation in detail. 10 marks**

**First Generation (1940s – 1956s)**

* **Technology:** Used vacuum tubes or thermionic valves.
* **Input/Output Device:** Punched cards and paper tape.
* **Memory:** Magnetic drums and magnetic tape.
* **Operating System:** None.
* **Programming Language:** Machine Language.
* **Examples:** ENIAC, UNIVAC, EDSAC.

**Second Generation (1956 – 1963)**

* **Technology:** Used transistors, which were smaller and consumed less power.
* **Input/Output Device:** Punched cards and paper tape.
* **Memory:**
  + **Primary Memory:** Magnetic Core Memory.
  + **Secondary Storage:** Magnetic tape and Magnetic disk.
* **Operating System:** Batch Processing System.
* **Programming Languages:** Assembly Language.
* **Examples:** IBM (7090, 7094, 1401, 1920), UNIVAC 1107, PDP-1, PDP-8.

**Third Generation (1960s – 1970s)**

* **Technology:** Used Integrated Circuits (ICs), which combine thousands of transistors into a single chip.
* **Input Device:** Keyboard.
* **Output Device:** Monitor.
* **Memory:**
  + **Primary Memory:** Semiconductor memory (e.g., RAM, ROM).
  + **Secondary Storage:** Magnetic Disks (Hard Disk).
* **Operating System:**
  + Multiprogramming Operating System (e.g., IBM’s OS/360).
  + Time-Sharing Operating System.
* **Programming Languages:** C, Fortran, COBOL, Pascal, BASIC.
* **Examples:** IBM System/360, CDC 1700, UNIVAC 1108.

**Fourth Generation (1970 – Present)**

* **Technology:** Used Microprocessors.
* **Storage Devices:** Hard disk, floppy disk, optical discs (CD, DVD).
* **Operating Systems:**
  + Graphical User Interface (GUI) systems (e.g., Windows).
  + Multi-user and Multitasking Operating Systems (e.g., UNIX, MS-DOS).
* **Programming Languages:** SQL, Python, C#.
* **Applications:** Widely used for database querying, report generation, and data manipulation in database management systems.
* **Examples:** Cray-1, IBM 1401, STAR 1000, PDP-11, DEC-10.

**Fifth Generation (Present and Beyond)**

* **Technology:** Artificial Intelligence (AI) and Machine Learning (ML).
* **Focus:** Emphasis on problem-solving using constraints and logic rather than traditional algorithms.
* **Programming Languages:** Prolog, Lisp, Mercury, Python.
* **Uses:**
  + Supercomputers for complex tasks.
  + Emerging applications like self-driving cars, robotics, and quantum computing.
* **Examples:** IBM Watson, Google’s Quantum Computer.

**what is an operating system? Differentiate between internal and external commands of DOS with example. 1 + 4 marks**

**A screenshot of a computer

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**What is Computer System? How does the Computer System work? Explain with a suitable block diagram. 1 + 4 = 5**

**Make a list of any ten MS-DOS commands with their functions. 5 marks**

**Internal Commands**

1. **DIR:** Displays a list of files and directories in the current directory.
2. **CD:** Changes the current directory.
3. **CLS:** Clears all text from the command prompt window.
4. **COPY:** Copies files from one location to another.
5. **DEL:** Deletes files.

**External Commands**

1. **CHKDSK:** Checks the disk for errors and displays a status report.
2. **FORMAT:** Erases all data on the disk and prepares it for data storage.
3. **DISKCOPY:** Copies the entire content of one disk to another disk.
4. **XCOPY:** Copies files and directories, including subdirectories.
5. **DEFRAG:** Defragments the hard disk to improve read/write access.

<https://www.youtube.com/shorts/LMW1GnMiB5s?feature=share>

1) Here can i get full 5 marks form this answer 2) if not then show me with correciton and mofification 3) if extra ansewer is present then show me with modification and remove that one

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