DIGITAL LITERACY LEVEL 4 STUDY NOTES.

1. Identify Computer Hardware and Software

1. Meaning of a Computer

A **computer** is an **electronic machine** that is capable of accepting input (data), processing it under the control of a set of instructions (software), and producing meaningful output (information). It also has the ability to store data for future use. A computer performs this process repeatedly and accurately at high speed.

Computers are used in almost all areas of life such as education, business, healthcare, research, entertainment, and communication.

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2. Functions of a Computer

Computers perform five main functions:

a) Input

This is the process of entering data and instructions into the computer. The data may come from the user, another device, or a system.

b) Processing

Once the input is received, the computer's **Central Processing Unit (CPU)** interprets and manipulates the data according to the instructions. This is the core of computing.

c) Storage

During and after processing, data can be stored either temporarily or permanently. Temporary storage is done in RAM, while permanent storage is done on hard drives, SSDs, or external media.

d) Output

After processing, the result is sent to an output device so that the user can view or use the result. This could be text, sound, visuals, or any processed information.

e) Control

The control function manages and coordinates all the other operations. It ensures that input is directed to the right place, processing is done in the right order, and output is properly delivered.

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3. Components of a Computer

Computer components are divided into two main categories:

A. Hardware

Hardware refers to the **physical parts** of a computer that can be seen and touched. It includes input devices, output devices, storage devices, and the system unit.

i) Input Devices

These are devices used to **enter data or commands** into the computer.

- **Keyboard**: Used to type text and commands. It contains keys for letters, numbers, functions, and controls.
- **Mouse**: A pointing device used to select items on the screen. It detects motion and clicks.
- **Scanner**: Captures printed images or text and converts them into digital format.
- **Microphone**: Captures audio input which can be recorded, processed, or transmitted.
- **Webcam**: Captures live video and images, mostly used in video conferencing.

ii) Output Devices

These are devices used to **present the processed data** to the user.

- **Monitor (Screen)**: Displays visual output such as text, images, and videos. There are different types such as LCD, LED, and OLED.
- **Printer**: Produces a physical copy (hardcopy) of digital documents. Types include inkjet, laser, and dot matrix printers.
- **Speakers**: Produce sound output from audio files or software.
- **Projector**: Projects the screen display onto a larger surface like a wall or whiteboard for presentations.

iii) Storage Devices

These devices are used to **store data**, instructions, and information either permanently or temporarily.

Storage is classified into:

a) Primary Storage (Main Memory)

- **RAM (Random Access Memory)**: Temporary memory used by the CPU to store data being processed. It is volatile, meaning data is lost when power is off.
- **ROM (Read Only Memory)**: Permanent memory that contains startup instructions for the computer. It is non-volatile and cannot be easily modified.

b) Secondary Storage (Permanent Storage)

- **Hard Disk Drive (HDD)**: Stores operating systems, programs, and user files permanently. It has large capacity.
- **Solid State Drive (SSD)**: Similar to HDD but faster and more durable, with no moving parts.
- **Optical Discs (CD/DVD)**: Use laser technology to read and write data. Common for media storage.
- **Flash Drives (USB drives)**: Portable devices that store data using flash memory.
- **Memory Cards (SD cards)**: Used in smartphones, cameras, and tablets for extra storage.

c) Tertiary Storage

- Used for **backup and archival purposes**. Examples include cloud storage and tape drives.

d) Cache Memory

- A small amount of high-speed memory located close to the CPU. It stores frequently accessed data for quick retrieval.

e) Virtual Memory

- Part of the hard drive that is used as RAM when actual RAM is full, managed by the operating system.

iv) System Unit

The system unit contains the **core internal hardware components**:

- **Motherboard**: The main circuit board that connects all components. It hosts the CPU, memory, and other devices.
- **CPU (Central Processing Unit)**: Known as the brain of the computer. It carries out instructions from software by performing basic arithmetic, logic, and control operations.
- **Power Supply Unit**: Converts electric power to usable voltage for internal components.

- **Cooling System**: Includes fans and heat sinks to prevent overheating.

v) Communication Devices

These allow the computer to communicate with other devices or networks.

- **Network Interface Card (NIC)**: Enables connection to local networks or the internet.
- **Modem**: Converts digital signals into analog for transmission over telephone lines and vice versa.
- **Wi-Fi Adapter**: Allows wireless connection to internet or network.

B. Software

Software refers to **programs and instructions** that tell the computer what to do. It is not tangible and cannot be physically touched, but it is essential for the operation of the hardware.

Software is categorized into:

i) System Software

This type of software controls the hardware and basic operations of the computer.

- **Operating System (OS)**: Manages computer hardware and software resources and provides common services. Examples include Windows, Linux, macOS, and Android.
- **Utility Programs**: Help maintain and manage the computer. Examples include antivirus programs, disk cleanup tools, and file management tools.
- **Device Drivers**: Allow the operating system to communicate with hardware devices like printers or cameras.

ii) Application Software

This type of software allows the user to perform specific tasks.

- **Word Processors**: For creating documents (e.g., Microsoft Word).
- **Spreadsheets**: For calculations and data analysis (e.g., Microsoft Excel).
- **Browsers**: For accessing the internet (e.g., Google Chrome, Firefox).
- **Multimedia Players**: For playing audio and video (e.g., VLC Media Player).
- **Games**: Interactive software for entertainment or education.

iii) Programming Software

Used by developers to write, test, and maintain code.

- **Text Editors**: For writing code (e.g., Notepad++, Sublime Text).

- **Compilers**: Convert high-level code into machine language.
- **Integrated Development Environments (IDEs)**: Combine tools for coding, debugging, and testing (e.g., Visual Studio, Eclipse).

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4. Classification of Computers

Computers can be classified based on **size**, **function**, or **data handling methods**.

a) By Size and Power

- **Supercomputers**: The most powerful computers, used for complex tasks like climate modeling and scientific simulations.
- **Mainframe Computers**: Large systems used by organizations like banks and airlines for processing large amounts of data simultaneously.
- **Minicomputers**: Mid-sized computers used in small to medium enterprises for specialized tasks.
- **Microcomputers (Personal Computers)**: Include desktops, laptops, tablets, and smartphones, used by individuals and small offices.
- **Wearable Computers**: Small computers worn on the body like smartwatches and fitness bands.

b) By Purpose

- **General-Purpose Computers**: Designed to perform a variety of tasks. Examples include PCs, laptops, and smartphones.
- **Special-Purpose Computers**: Designed to perform specific functions. Examples include ATMs, traffic light control systems, and embedded systems in appliances.

c) By Data Handling

- **Analog Computers**: Work with continuous data. Used in devices like thermometers or speedometers.
- **Digital Computers**: Work with binary data (0s and 1s). Almost all modern computers are digital.
- **Hybrid Computers**: Combine the features of analog and digital computers. Used in medical and scientific applications.

Sample Exams Questions:

Short Answer Questions (20)

1. Define a computer.
2. What are the five basic functions of a computer?
3. List any four input devices.
4. Explain the function of a mouse.
5. What is the main function of the CPU?
6. Name two types of computer memory.
7. Differentiate between RAM and ROM.
8. What is an output device? Give two examples.
9. What is the purpose of a hard disk drive?
10. What is system software? Give one example.
11. Give one function of the operating system.
12. Define application software and give an example.
13. What is a device driver used for?
14. Name two examples of secondary storage devices.
15. Explain the difference between hardware and software.
16. What does a scanner do?
17. Give two examples of communication devices.
18. What is meant by “general-purpose computer”?
19. Distinguish between digital and analog computers.
20. What is utility software used for?

Multiple Choice Questions (20)

1. What is the main function of an input device?
   a) Store data
   b) Display information
   c) Enter data into a computer
   d) Print documents
   Answer: c)
2. Which of the following is NOT an output device?
   a) Monitor
   b) Printer
   c) Speaker
   d) Scanner
   Answer: d)
3. ROM is a type of:
   a) Input device
   b) Volatile memory
   c) Output device
   d) Non-volatile memory
   Answer: d)
4. The brain of the computer is the:
   a) Hard Disk
   b) CPU

c) RAM
d) Monitor
Answer: b)

5. Which one is an example of application software?
   a) Windows
   b) Microsoft Word
   c) Linux
   d) Antivirus
   Answer: b)
6. Which of these is a primary storage device?
   a) USB flash drive
   b) CD-ROM
   c) RAM
   d) External hard drive
   Answer: c)
7. A device used to convert printed text into digital format is a:
   a) Printer
   b) Projector
   c) Scanner
   d) Monitor
   Answer: c)
8. Which software manages hardware resources?
   a) Word processor
   b) Operating system
   c) Spreadsheet
   d) Browser
   Answer: b)
9. Which type of computer is most powerful?
   a) Laptop
   b) Minicomputer
   c) Mainframe
   d) Supercomputer
   Answer: d)
10. Which of the following is a communication device?
    a) CPU
    b) Modem
    c) Mouse
    d) Printer
    Answer: b)
11. The type of memory that loses data when power is off is:
    a) ROM
    b) SSD
    c) RAM
    d) HDD
    Answer: c)

12. A device that stores large amounts of data permanently is:
    a) RAM
    b) Cache
    c) Hard Disk
    d) CPU
    Answer: c)
13. Software used for virus scanning is called:
    a) Compiler
    b) Utility software
    c) Application software
    d) Operating system
    Answer: b)
14. Which of the following is an example of secondary storage?
    a) RAM
    b) ROM
    c) Cache
    d) DVD
    Answer: d)
15. Flash drives are also known as:
    a) Hard disks
    b) Memory cards
    c) USB drives
    d) Optical drives
    Answer: c)
16. An example of a wearable computer is:
    a) Tablet
    b) Laptop
    c) Smartwatch
    d) Desktop
    Answer: c)
17. Application software is mainly used to:
    a) Boot the computer
    b) Perform user-specific tasks
    c) Manage memory
    d) Connect hardware
    Answer: b)
18. Which one is a pointing device?
    a) Keyboard
    b) Scanner
    c) Mouse
    d) Printer
    Answer: c)
19. Which computer is used in large businesses for bulk processing?
    a) Laptop
    b) Supercomputer
    c) Mainframe

d) Tablet
Answer: c)

20. What type of software is used to write and test programs?
    a) Application software
    b) Operating system
    c) Programming software
    d) Utility software
    Answer: c)

2. Apply Security Measures to Data, Hardware, and Software

◆ 1. Data Security and Control

✅ What is Data Security?

Data security refers to protective measures taken to safeguard digital information from unauthorized access, corruption, or theft throughout its lifecycle. It ensures **confidentiality, integrity, and availability (CIA)** of data.

✅ Key Concepts:

- **Confidentiality** – Ensuring only authorized users access sensitive information.
- **Integrity** – Ensuring data is accurate, consistent, and protected from unauthorized modifications.
- **Availability** – Ensuring authorized users can access data when needed.

✅ Common Data Control Techniques:

1. **Passwords and Authentication**
    - Use of strong passwords, two-factor authentication (2FA) or biometrics.
2. **Encryption**
    - Converts data into unreadable code. Only authorized users with a key can decrypt it.
3. **Access Control**
    - Granting or denying users access to specific files or systems (e.g., role-based access control).
4. **Backups**

    - Regular copying of data to secondary locations to prevent loss from disasters or malware.
5. **Audit Trails**
    - Keeping records of system and user activities to monitor data access and changes.

◆ 2. Security Threats and Control Measures

✅ A. Security Threats:

1. **Malware (Malicious Software)**
    - Includes viruses, worms, Trojans, spyware, and ransomware. Designed to damage or disrupt systems.
2. **Phishing**
    - Tricking users into revealing sensitive information through fake emails or websites.
3. **Hacking**
    - Unauthorized access to computer systems with malicious intent.
4. **Denial of Service (DoS) Attacks**
    - Overloading a system to make it unavailable to users.
5. **Social Engineering**
    - Manipulating individuals into revealing confidential information.
6. **Data Theft**
    - Stealing sensitive information such as personal, financial, or intellectual property.

✅ B. Control Measures:

1. **Anti-virus and Anti-malware Software**
    - Detects and removes malicious software.
2. **Firewalls**
    - Monitors and controls incoming and outgoing network traffic based on security rules.
3. **Regular Software Updates**
    - Fixes vulnerabilities that attackers might exploit.
4. **User Training and Awareness**
    - Educating users on recognizing phishing and safe data handling practices.
5. **Physical Security**
    - Locks, security cameras, and restricted access areas for hardware protection.
6. **Data Encryption and Secure Protocols**
    - HTTPS, VPNs, and encryption tools to secure communication and storage.

◆ 3. Types of Computer Crimes

Computer crimes are illegal acts involving the use of computers or networks. They are punishable by law.

✅ Major Types:

1. **Hacking** – Gaining unauthorized access to computer systems.
2. **Phishing & Identity Theft** – Using fake communications to steal personal information.
3. **Data Breach** – Illegally accessing or leaking private data.
4. **Malware Attacks** – Spreading harmful software to damage systems or steal data.
5. **Online Fraud** – Deceiving people online to gain money or sensitive data.
6. **Cyberbullying and Harassment** – Using digital platforms to intimidate or threaten individuals.
7. **Software Piracy** – Unauthorized copying or distribution of software.
8. **Denial of Service (DoS) Attacks** – Disrupting services or websites intentionally.

◆ 4. Detection and Protection Against Computer Crimes

✅ Detection Methods:

1. **Intrusion Detection Systems (IDS)**
   - Monitors network traffic for suspicious activities.
2. **Audit Logs**
   - Tracks user activity and system access.
3. **Security Scanners**
   - Tools to identify vulnerabilities in the system.
4. **User Reports**
   - Encouraging employees or users to report suspicious activity.
5. **Digital Forensics**
   - Investigating digital crimes by analyzing devices and data trails.

✅ Protection Measures:

1. **Strong Authentication**
   - Use of multi-factor authentication (MFA) and secure login practices.
2. **Regular Updates and Patches**
   - Timely updating of software and operating systems.
3. **Firewall and Network Security Tools**
   - Prevent unauthorized access and monitor traffic.

4. **User Access Controls**
    - Limit access to sensitive data only to those who need it.
5. **Data Backup and Recovery Plans**
    - Ensures data can be restored after an attack.
6. **Cybersecurity Policies**
    - Establishing rules and guidelines for safe use of IT systems.
7. **Legal Measures**
    - Enforcement of cyber laws and pursuing legal action against offenders.

SAMPLE EXAM QUESTIONS.

Short Answer Questions (20)

1. What is data security?
2. Define the term “encryption.”
3. Give two examples of access control measures.
4. What is the purpose of a firewall?
5. What is the difference between hardware security and software security?
6. Explain how antivirus software helps protect a computer.
7. Name two types of data backup methods.
8. What is phishing?
9. Give one example of physical security for computer hardware.
10. What is a security threat?
11. State two common causes of data loss.
12. How does two-factor authentication enhance security?
13. What is a computer virus?
14. Differentiate between malware and spyware.
15. Mention any two control measures against hacking.
16. What is the role of audit logs in computer security?
17. Define a Denial of Service (DoS) attack.
18. What is meant by software piracy?
19. What are digital forensics used for?
20. List any two types of computer crimes.

◆ Multiple Choice Questions (20)

1. Which of the following best defines data security?
   a) Speeding up access to files
   b) Preventing unauthorized access and data loss
   c) Designing databases

d) Installing applications
Answer: b)

2. What type of software is used to detect and remove malicious programs?
   a) Spreadsheet
   b) Antivirus
   c) Compiler
   d) Word processor
   Answer: b)
3. Which of the following is an example of a security threat?
   a) Excel
   b) Printer
   c) Phishing
   d) Cloud backup
   Answer: c)
4. Encryption is used to:
   a) Increase file size
   b) Compress data
   c) Hide the data content
   d) Make data unreadable to unauthorized users
   Answer: d)
5. Which of the following is a common physical security control?
   a) Backup
   b) Firewall
   c) Password
   d) CCTV camera
   Answer: d)
6. A **firewall** is mainly used to:
   a) Create files
   b) Encrypt files
   c) Block unauthorized access
   d) Back up files
   Answer: c)
7. Malware includes all EXCEPT:
   a) Viruses
   b) Worms
   c) Spreadsheets
   d) Trojans
   Answer: c)
8. Two-factor authentication involves:
   a) Two users accessing data
   b) A username and a strong password
   c) Something you know and something you have
   d) Backing up data twice
   Answer: c)
9. Which of these is considered a form of cybercrime?
   a) Using open-source software

b) Software installation
c) Identity theft
d) Regular updates
Answer: c)

10. What is a hacker?
a) A type of software
b) Someone who repairs computers
c) A person who gains unauthorized access to systems
d) A programmer
Answer: c)

11. Backing up data helps in:
a) Creating viruses
b) Preventing system crashes
c) Data recovery in case of loss
d) Enhancing internet speed
Answer: c)

12. Which one of these is NOT a type of malware?
a) Trojan
b) Virus
c) Firewall
d) Spyware
Answer: c)

13. A Denial of Service (DoS) attack:
a) Deletes all data
b) Steals credit card numbers
c) Overloads a server
d) Encrypts user data
Answer: c)

14. Which one is used for secure data transmission?
a) PDF
b) HTTP
c) HTTPS
d) ISP
Answer: c)

15. A device used to prevent physical access to computers is:
a) Router
b) USB
c) Lock
d) Antivirus
Answer: c)

16. What type of software is used to copy software illegally?
a) Piracy software
b) Antivirus
c) Compiler
d) Spreadsheet
Answer: a)

17. Which of the following is **NOT** a security control measure?
    a) Access control
    b) Malware installation
    c) Backup and restore
    d) Encryption
    Answer: b)
18. The process of investigating computer crimes is called:
    a) Phishing
    b) Programming
    c) Digital forensics
    d) Virtualization
    Answer: c)
19. Which of these is an example of identity theft?
    a) Editing a photo
    b) Using another person's login without permission
    c) Changing your password
    d) Installing a printer driver
    Answer: b)
20. A security measure to protect data from loss is:
    a) Creating user accounts
    b) File compression
    c) Data backup
    d) File sharing
    Answer: c)

3. Apply Computer Software in Solving Tasks.

1. Operating System (OS)

✅ Definition:

An **Operating System (OS)** is system software that acts as an interface between the computer hardware and the user. It manages computer hardware resources and provides common services for computer programs.

✅ Functions of an Operating System:

1. **Process Management** – Manages running applications and tasks.
2. **Memory Management** – Allocates and monitors computer memory (RAM).

3. **File System Management** – Controls the storage, retrieval, and organization of files.
4. **Device Management** – Manages input and output devices (keyboard, mouse, printer, etc.).
5. **User Interface (UI)** – Provides a user-friendly way to interact with the system (Graphical or Command-Line).
6. **Security and Access Control** – Manages user permissions and prevents unauthorized access.
7. **Error Detection** – Detects and handles system and software errors.

✅ Types of Operating Systems:

1. **Single-user OS** – Supports one user at a time (e.g., MS-DOS).
2. **Multi-user OS** – Allows multiple users to use the system concurrently (e.g., UNIX).
3. **Multitasking OS** – Executes multiple tasks simultaneously (e.g., Windows, Linux).
4. **Real-Time OS** – Used for time-critical applications like industrial robots.
5. **Mobile OS** – Designed for mobile devices (e.g., Android, iOS).
6. **Network OS** – Supports network functions like file sharing (e.g., Novell NetWare).

✅ Common Operating Systems:

- **Microsoft Windows**
- **Linux**
- **macOS**
- **Android**
- **iOS**

◆ 2. Word Processing

✅ Definition:

Word Processing is the use of software to create, edit, format, and print text documents.

✅ Common Word Processors:

- Microsoft Word
- Google Docs
- WPS Office
- LibreOffice Writer

✅ Uses:

- Writing letters, memos, and reports

- Creating CVs and cover letters
- Designing newsletters and brochures
- Document formatting for printing

✅ Features:

- Text formatting (font, size, color)
- Paragraph alignment and indentation
- Spell check and grammar tools
- Tables and columns
- Inserting images, charts, and hyperlinks
- Mail merge for bulk communication
- Headers, footers, and page numbers
- Document templates and styles

✅ Types of Word Processing:

- **Basic Word Processing** – Simple document editing.
- **Advanced Word Processing** – Includes features like templates, macros, and collaboration tools.

◆ 3. Spreadsheets

✅ Definition:

A **Spreadsheet** is software used to organize, analyze, and store data in tabular form using rows and columns. It allows for calculations, graphing, and data analysis.

✅ Common Spreadsheet Programs:

- Microsoft Excel
- Google Sheets
- LibreOffice Calc

✅ Uses:

- Creating budgets and financial reports
- Statistical analysis and charting
- Inventory management
- Payroll and invoice generation
- Forecasting and data modeling

✅ Features:

- Cells, rows, and columns
- Formulas and functions (e.g., SUM, AVERAGE)
- Charts and graphs (e.g., pie, bar, line)
- Data sorting and filtering
- Conditional formatting
- Pivot tables
- Data validation
- Linking sheets and external data

✅ Types:

- **Simple Spreadsheets** – Used for basic data entry and calculations.
- **Advanced Spreadsheets** – Includes data analysis, macro programming, and automation.

◆ 4. Databases

✅ Definition:

A **Database** is an organized collection of related data that can be easily accessed, managed, and updated.

✅ Database Software:

- Microsoft Access
- MySQL
- Oracle Database
- SQLite
- PostgreSQL

✅ Uses:

- Storing and retrieving student records
- Managing inventory in businesses
- Tracking customer details
- Managing payroll systems
- Generating reports

✅ Features:

- Tables to store data

- Forms for data entry
- Queries to search and filter data
- Reports for data presentation
- Relationships between tables
- Data validation and integrity rules
- Security and access control

✅ Types of Databases:

1. **Flat File Database** – Stores data in a single table (e.g., Excel).
2. **Relational Database (RDBMS)** – Uses multiple related tables (e.g., Access, MySQL).
3. **Object-Oriented Database** – Stores data in the form of objects.
4. **Distributed Database** – Data is stored across multiple locations.

📌 Note to Students:

Important Practical Information
You will learn the **hands-on/practical skills** for **Word Processing, Spreadsheets, and Database** in the **unit/subject titled "Use of Microsoft Office Tools (MS Tools)."**
In this theory unit, focus on understanding definitions, functions, and features. The actual use of **Microsoft Word, Excel, and Access** will be covered during practical sessions in that subject.

Sample Exam Questions.

✅ Short Answer Questions

1. What is an operating system?
2. Name any two functions of an operating system.
3. Give three examples of operating systems.
4. Define word processing.
5. Mention two uses of word processing software.
6. List any two features found in word processing applications.
7. What is a spreadsheet?
8. State two uses of spreadsheet programs.
9. Give two common spreadsheet applications.
10. Define a database.
11. State two examples of database software.
12. List two features of database management systems.
13. What is the difference between a flat file and a relational database?

14. Mention any two types of operating systems.
15. What is the purpose of using formulas in a spreadsheet?
16. How are charts useful in spreadsheet applications?
17. What is a query in a database system?
18. Give two advantages of using a database.
19. Why is file management important in an operating system?
20. Which software will you use to create a CV – word processor, spreadsheet, or database? Why?

✅ Multiple Choice Questions

1. Which of the following is an operating system?
   A. MS Word
   B. Windows 10
   C. MySQL
   D. Excel
   → **B. Windows 10**
2. The main function of an operating system is to:
   A. Design websites
   B. Play videos
   C. Manage hardware and software
   D. Edit images
   → **C. Manage hardware and software**
3. Which of the following is NOT a type of operating system?
   A. Multitasking
   B. Mobile
   C. Spreadsheet
   D. Real-time
   → **C. Spreadsheet**
4. Which application is used for word processing?
   A. Excel
   B. Access
   C. Word
   D. PowerPoint
   → **C. Word**
5. Word processing software is mainly used to:
   A. Perform calculations
   B. Write and format text documents
   C. Manage databases
   D. Create presentations
   → **B. Write and format text documents**
6. A feature of word processing software is:
   A. Pivot tables
   B. Formulas

C. Spell check
D. SQL queries
→ **C. Spell check**

7. Which software is best for preparing a school budget?
   A. Word
   B. Excel
   C. Access
   D. PowerPoint
   → **B. Excel**
8. A formula in a spreadsheet always begins with:
   A. +
   B. #
   C. =
   D. @
   → **C. =**
9. What is a common file extension for a Word document?
   A. .xls
   B. .docx
   C. .mdb
   D. .ppt
   → **B. .docx**
10. Which feature in Excel helps you analyze data by summarizing it?
    A. Chart
    B. Header
    C. Pivot Table
    D. Mail Merge
    → **C. Pivot Table**
11. A software used to manage large volumes of related data is called:
    A. Spreadsheet
    B. Database
    C. Presentation
    D. Graphics editor
    → **B. Database**
12. What does DBMS stand for?
    A. Database Memory System
    B. Digital Base Machine Software
    C. Database Management System
    D. Data Base Mapping Software
    → **C. Database Management System**
13. Which of the following is a database software?
    A. Word
    B. Excel
    C. PowerPoint
    D. Access
    → **D. Access**

14. In Excel, a rectangular box where you enter data is called a:
    A. Box
    B. Row
    C. Cell
    D. Grid
    → **C. Cell**
15. What is used in databases to search specific records?
    A. Form
    B. Report
    C. Query
    D. Chart
    → **C. Query**
16. A software that allows multiple users to access data at the same time is called a:
    A. Flat file
    B. Single-user system
    C. RDBMS
    D. File editor
    → **C. RDBMS**
17. Which one of the following is NOT a function of an operating system?
    A. Memory management
    B. Input/output management
    C. Page formatting
    D. File management
    → **C. Page formatting**
18. The area where data is temporarily stored while being processed is:
    A. ROM
    B. RAM
    C. Hard Disk
    D. CD
    → **B. RAM**
19. The part of MS Access used to present data in a printable layout is:
    A. Query
    B. Form
    C. Report
    D. Field
    → **C. Report**
20. A chart used in Excel to compare data visually is called a:
    A. Graph
    B. Table
    C. Function
    D. Macro
    → **A. Graph**

4. Apply Internet and Email in Communication at the Workplace

◆ 1. Computer Networks

✅ Definition:

A **computer network** is a system that connects two or more computers and devices for the purpose of sharing resources and communication.

✅ Types of Computer Networks:

1. **LAN (Local Area Network):**
   - Covers a small area like an office or building.
   - Example: Office computers connected to a local server.
2. **WAN (Wide Area Network):**
   - Covers large geographical areas.
   - Example: The internet.
3. **MAN (Metropolitan Area Network):**
   - Covers a city or a campus.
4. **PAN (Personal Area Network):**
   - Covers a very small area like a room.
   - Example: Bluetooth connection between a phone and a laptop.

✅ Importance of Networks in the Workplace:

- Sharing of files, printers, and internet connection.
- Communication through email, chat, and video conferencing.
- Centralized data storage and backup.
- Easy updates and security management.

◆ 2. Uses of the Internet in the Workplace

✅ Definition of the Internet:

The **Internet** is a global network that connects millions of private, public, academic, and business networks using standard communication protocols (TCP/IP).

✅ Workplace Applications of the Internet:

1. **Communication:**
   - Email, instant messaging, video conferencing (Zoom, Teams, Google Meet).
2. **Research and Information Access:**
   - Accessing industry news, manuals, tutorials, and competitor information.
3. **Online Collaboration:**
   - Tools like Google Drive, Dropbox, Trello, and Slack help teams work together remotely.
4. **Marketing and Advertising:**
   - Social media marketing, email marketing, and online advertising.
5. **E-commerce and Online Transactions:**
   - Selling or purchasing goods and services online.
6. **Cloud Computing:**
   - Using cloud platforms (e.g., Google Workspace, Microsoft 365) for storage and productivity.
7. **Remote Work:**
   - Accessing systems and files from home or other remote locations.

◆ 3. Electronic Mail (Email) Concept

✅ Definition:

Email (Electronic Mail) is a method of exchanging digital messages over the internet using email addresses.

✅ Components of an Email Message:

- **To:** Recipient's email address.
- **Cc (Carbon Copy):** Secondary recipients (visible to all).
- **Bcc (Blind Carbon Copy):** Secondary recipients (invisible to others).
- **Subject:** Short title describing the purpose of the message.
- **Body:** Main content or message.
- **Attachments:** Files sent along with the message.

✅ Steps in Sending/Receiving Email:

1. Compose a new message.
2. Enter recipient’s address.
3. Add subject and message body.
4. Attach files if needed.
5. Click “Send”.

6. Recipient receives and reads the email using their inbox.

✅ Advantages of Email in the Workplace:

- Fast and reliable communication.
- Can send messages to multiple recipients.
- Messages can be stored and retrieved.
- Supports file attachments.
- Reduces use of paper (eco-friendly).

Common Internet and Email Terminologies.

1. **IP Address**
   A unique number assigned to each device on a network, allowing it to be identified and communicate with other devices.
2. **URL (Uniform Resource Locator)**
   The address of a specific web page or file on the internet, such as `https://www.example.com`.
3. **HTTP (HyperText Transfer Protocol)**
   A protocol used for accessing and transmitting web pages on the internet. It is not secure.
4. **HTTPS (HyperText Transfer Protocol Secure)**
   A secure version of HTTP that encrypts data exchanged between the browser and the website.
5. **ISP (Internet Service Provider)**
   A company that provides internet access to homes and businesses, such as Safaricom or Zuku.
6. **Bandwidth**
   The amount of data that can be transmitted over a network in a given amount of time, usually measured in Mbps.
7. **Attachment**
   A document, image, or file sent along with an email message.
8. **Inbox**
   A folder or location in an email account where incoming messages are stored.
9. **Spam (or Junk Mail)**
   Unsolicited or irrelevant emails, often advertisements or scams, sent in bulk to many users.
10. **Phishing**
    A fraudulent method used to obtain sensitive personal information by pretending to be a trustworthy source via email or website.
11. **Download**
    The process of receiving data or files from the internet to a local device.
12. **Upload**
    The process of sending data or files from a local device to a remote server or website on the internet.

13. **Firewall**
    A software or hardware security system that controls incoming and outgoing network traffic to protect against unauthorized access.
14. **Web Browser**
    A software application used to access and view websites, such as Google Chrome, Mozilla Firefox, or Microsoft Edge.
15. **Wi-Fi**
    A wireless technology that allows devices to connect to a local area network and access the internet without physical cables.
16. **Domain Name**
    A human-readable address of a website, such as `pscustudies.com`, that maps to an IP address.
17. **Email Client**
    A software or application used to manage and send/receive email messages, such as Microsoft Outlook or Mozilla Thunderbird.
18. **SMTP (Simple Mail Transfer Protocol)**
    A protocol used to send email messages from one server to another.
19. **POP3 (Post Office Protocol version 3)**
    An email protocol that downloads messages from the server to a local device and usually deletes them from the server afterward.
20. **IMAP (Internet Message Access Protocol)**
    An email protocol that allows users to access their emails from multiple devices by keeping the messages on the mail server.
21. **Digital Signature**
    An electronic code attached to a message or document to verify the sender's identity and ensure the content has not been altered.

Sample Exam Questions:

Short Answer Questions

1. What is a computer network?
2. Define LAN and give one example of where it might be used.
3. Mention two advantages of using the internet in the workplace.
4. What does the acronym ISP stand for?
5. List three components of an email message.
6. What is the function of an inbox in email communication?
7. Define the term "phishing".
8. What is the difference between HTTP and HTTPS?
9. Name any two web browsers commonly used.
10. Define the term ‘firewall’ in networking.
11. What does Wi-Fi enable users to do?
12. Explain the difference between upload and download.

13. What is the role of SMTP in email communication?
14. State one difference between POP3 and IMAP.
15. What is an email attachment?
16. What does the term 'spam' refer to in email usage?
17. How does IMAP benefit users accessing emails on multiple devices?
18. What is a domain name? Give an example.
19. Define email client and name one example.
20. How does a digital signature improve email security?

◆ Multiple Choice Questions (MCQs)

1. Which of the following is a type of network used in homes and small offices?
   A. WAN
   B. MAN
   C. LAN
   D. SAN
   Answer: C
2. What is the main function of a firewall?
   A. To boost internet speed
   B. To prevent unauthorized access
   C. To manage files
   D. To send emails
   Answer: B
3. The acronym ‘ISP’ stands for:
   A. Internet Signal Provider
   B. Internal Server Process
   C. Internet Service Provider
   D. International Speed Protocol
   Answer: C
4. Which of the following is NOT a valid email component?
   A. Subject
   B. Body
   C. RAM
   D. Attachment
   Answer: C
5. An email protocol that stores emails on the server and allows multiple device access is:
   A. POP3
   B. IMAP
   C. SMTP
   D. FTP
   Answer: B
6. What does HTTP stand for?
   A. HyperText Transmission Protocol
   B. HyperText Transfer Protocol

C. HighText Transmission Protocol
D. Hyper Terminal Transfer Program
Answer: B

7. Which tool is used to access websites?
A. Word Processor
B. Email Client
C. Web Browser
D. Database
Answer: C

8. Which of the following is a method of email security?
A. Digital Signature
B. Reboot
C. Spam
D. Attachment
Answer: A

9. What is the purpose of the 'To' field in an email?
A. To attach files
B. To write the message
C. To specify the recipient
D. To write the subject
Answer: C

10. What is a phishing attack?
A. Sending a virus
B. Attempt to steal user data via fake emails
C. A hardware malfunction
D. A password change
Answer: B

11. Which of the following is used to send emails?
A. POP3
B. IMAP
C. SMTP
D. IP
Answer: C

12. What does Wi-Fi allow users to do?
A. Increase screen brightness
B. Connect devices wirelessly
C. Format emails
D. Block spam
Answer: B

13. A unique address for a website is called a:
A. Browser
B. URL
C. Signature
D. Firewall
Answer: B

14. The process of receiving files from the internet is known as:
    A. Uploading
    B. Downloading
    C. Surfing
    D. Browsing
    Answer: B
15. Which of the following is NOT a web browser?
    A. Chrome
    B. Firefox
    C. Internet Explorer
    D. Outlook
    Answer: D
16. A software used to manage email is called:
    A. Email Client
    B. IP Address
    C. ISP
    D. URL
    Answer: A
17. HTTPS is more secure than HTTP because it:
    A. Is faster
    B. Uses larger files
    C. Encrypts data
    D. Blocks spam
    Answer: C
18. A domain name is:
    A. The name of a computer
    B. An email ID
    C. The name of a website
    D. A hardware part
    Answer: C
19. Unwanted emails are often called:
    A. Drafts
    B. Spam
    C. Attachments
    D. Inboxes
    Answer: B
20. A tool used to prevent unauthorized internet access is a:
    A. Wi-Fi
    B. Web Browser
    C. Firewall
    D. Spam Filter
    Answer: C