

# Assignment – 1 Answers (Brief + Understandable)

## 1. Short Answers

### a. Hardware:

Physical components of a computer system like CPU, monitor, keyboard, mouse, etc.

### b. Primary Memory:

Main memory (RAM + ROM) used by CPU to store data and instructions temporarily for quick access.

### c. Topology:

Structure or layout that defines how computers or nodes are connected in a network (e.g., Bus, Star).

### d. Computer Network:

A system of interconnected computers that share data and resources (like internet, printers).

### e. Email:

Electronic mail used to send/receive digital messages via the internet.

*Example:* Gmail, Outlook.

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## 2. Short Explanations

### a. Function of Web Browser:

Used to access and view web pages (e.g., Chrome, Firefox). It interprets HTML and displays websites.

### b. Command-based vs GUI-based OS:

- *Command-based:* Uses text commands (e.g., MS-DOS).
- *GUI-based:* Uses icons and menus (e.g., Windows, macOS).

### c. Three Web Browsers:

- **Google Chrome:** Fast, secure, syncs with Google account.
- **Mozilla Firefox:** Open-source, privacy-focused.
- **Microsoft Edge:** Built-in with Windows, efficient with RAM.

#### d. Function of Output Unit:

Displays processed results — e.g., Monitor shows output, Printer prints it.

#### e. Multiprogramming, Multitasking, Multiprocessing:

- *Multiprogramming*: Runs multiple programs in memory at once.
  - *Multitasking*: Runs several tasks by switching between them rapidly.
  - *Multiprocessing*: Uses two or more CPUs to execute programs simultaneously.
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### 3. Pseudo Code

**Definition:** Step-by-step instructions in plain English for writing algorithms.

**Example (largest of two numbers):**

```
Start
Input A, B
If A > B then
    Print A is largest
Else
    Print B is largest
End If
Stop
```

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### 4. Compiler and Interpreter

- **Compiler**: Translates entire program to machine code before execution (e.g., C).
  - **Interpreter**: Translates and executes line by line (e.g., Python).
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### 5. Operating System (OS) Functions

- Process management
- Memory management
- File management

- Device management
  - User interface
  - Security and resource allocation
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## 6. LAN, MAN, WAN

| Type | Full Form                 | Coverage               | Example          |
|------|---------------------------|------------------------|------------------|
| LAN  | Local Area Network        | Small area like office | Wi-Fi in home    |
| MAN  | Metropolitan Area Network | City level             | Cable TV network |
| WAN  | Wide Area Network         | Country/global         | Internet         |

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## 7. Assembler, Compiler, Interpreter

| Tool        | Converts                  | Execution | Example |
|-------------|---------------------------|-----------|---------|
| Assembler   | Assembly → Machine code   | Whole     | MASM    |
| Compiler    | High-level → Machine code | Whole     | C, C++  |
| Interpreter | Line-by-line execution    | Line      | Python  |

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## 8. Role of OS

- **Process Management:** Schedules and runs processes.
  - **File Management:** Organizes and controls file storage.
  - **Device Management:** Handles I/O devices via drivers.
  - **Memory Management:** Allocates/deallocates RAM efficiently.
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## 9. Topologies

| Type | Description | Advantages | Limitations |
|------|-------------|------------|-------------|
|------|-------------|------------|-------------|

|             |                                     |                   |                              |
|-------------|-------------------------------------|-------------------|------------------------------|
| <b>Bus</b>  | All systems share one cable         | Simple, cheap     | Failure in cable affects all |
| <b>Star</b> | All nodes connect to central hub    | Easy to manage    | Hub failure breaks network   |
| <b>Ring</b> | Each node connects to next          | No data collision | Failure in one affects all   |
| <b>Mesh</b> | Every node connected to every other | Reliable          | Expensive, complex           |

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## 10. Algorithm

**Definition:** Step-by-step method to solve a problem.

**Characteristics:** Finite, clear, input/output, effective.

**Algorithm to find max of two numbers:**

1. Start
  2. Input A, B
  3. If  $A > B$  then print A else print B
  4. Stop
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## 11. Algorithm (Even or Odd)

1. Start
  2. Input N
  3. If  $N \% 2 == 0$  then print "Even"  
Else print "Odd"
  4. Stop
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## 12. Flowchart (Factorial of N)

**Steps:**

Start → Input N → Set  $F=1$  →  $i=1$  → Repeat  $F=F*i$  until  $i=N$  → Print F → Stop

*(Draw standard flowchart symbols for process, input/output, decision.)*

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## 13. Memory Hierarchy

**Definition:** Arrangement of memory based on speed, size, and cost.

**Hierarchy:**

Registers → Cache → Main Memory (RAM) → Secondary (Hard Disk) → Tertiary (Cloud/Backup).

**Speed** ↓, **Size** ↑, **Cost** ↓

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## 14. Data Communication

Transfer of data between devices using transmission media.

**Characteristics:**

- Delivery (to correct device)
  - Accuracy
  - Timeliness
  - Jitter (variation in delay)
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## 15. Role of OS in Resource Allocation

Distributes CPU time, memory, and I/O devices fairly among processes for efficient system performance.