

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.

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
```

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

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

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

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

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.)

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 ↓

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.