Chapter # 1

Chapter 1 – Introduction

Part I: Short Questions

Q1. Define network environment?

- A **network environment** is the combination of hardware, software, users, and communication protocols that make up a computer network.
- It includes devices (computers, servers, printers), transmission media (cables, wireless), and software that manage connectivity.
  Example: A university computer lab connected through switches, routers, and Windows Server.

Q2. What is peer-to-peer network?

- A network where **each computer acts as both client and server**.
- No dedicated server.
- Best for small networks (less than 10 PCs).
  Example: File sharing between 2 PCs using Bluetooth.

Q3. What is client-server network?

- A network where clients request services from a **central server**.
- Server provides resources like files, databases, printers.
  Example: Gmail → client browser requests → Google server responds.

Q4. Which operation is used in client server network?

- **Request and Response operation**.
- Client sends a request → server processes → server sends response.

Q5. Difference between client server and peer-to-peer network?

Client-Server	Peer-to-Peer
Centralized server	No dedicated server
Suitable for large networks	Suitable for small networks
High cost but more secure	Low cost but less secure
Example: Banks, Gmail	Example: LAN in small office

Q6. Describe transmission media?

- Medium used to transfer data between devices.
- Types:
  1. **Wired:** Twisted pair, coaxial cable, optical fiber.
  2. **Wireless:** Radio waves, Wi-Fi, Bluetooth.

Q7. Define Network Interface Card (NIC)?

- A **hardware card** installed in a computer for network connectivity.
- Provides a unique **MAC address**.
  Example: Ethernet card or Wi-Fi adapter.

Q8. Write steps how to join a computer to a domain?

1. Right-click **Computer → Properties → Change Settings**.
2. Click **Change** under Computer Name.
3. Select **Domain**, type domain name.
4. Enter domain credentials → Restart computer.

Q9. What is troubleshooting and maintenance?

- **Troubleshooting:** Identifying and fixing network or computer problems.
- **Maintenance:** Regular tasks like updates, backups, virus scans to keep system running smoothly.

Q10. What is file system and enlist types of file system?

- A **file system** controls how data is stored and retrieved in a computer.
- Types: **FAT32, NTFS, exFAT**.

Q11. Define network permission?

- **Rules/settings** that control access to files, folders, and resources on a network.
  Example: A folder shared only with "Admins" group.

Q12. Define task scheduling?

- A **Windows feature** that allows automatic execution of tasks at a specific time.
  Example: Schedule daily antivirus scan at 9:00 PM.

Q13. Describe compress and un-compress data?

- **Compress:** Reducing file size (e.g., ZIP, RAR).
- **Un-compress:** Restoring to original form.
  Example: Compressing a folder before sending by email.

Q14. What are offline files?

- Files stored on a **network server** but available to the user even when not connected.
- Synced automatically when reconnected.

Q15. Describe encrypt and decrypt data?

- **Encrypt:** Convert plain text into unreadable code for security.
- **Decrypt:** Convert encrypted code back into plain text.
  Example: WhatsApp uses end-to-end encryption.

Part II: Long Questions

Q1. Explain the basic network components and describe each.

- **Server**: Provides services (file server, print server).
- **Clients**: Computers that use services.
- **Transmission Media**: Cable/wireless links for communication.
- **NIC**: Connects devices to network.
- **Switch/Hub**: Connect multiple devices.
- **Router**: Connects different networks and provides internet access.
- **Shared Data & Printers**: Common resources.

Q2. Write a short note on Hub, Switch, Router.

- **Hub**: Broadcasts data to all devices. Cheap but less efficient.

- **Switch**: Sends data only to intended device. Faster and secure.
- **Router**: Connects multiple networks and directs data packets to correct destination.

Q3. Write client-end basic settings.

1. Set unique computer name.
2. Assign administrator password.
3. Configure IP address.
4. Change workgroup name.
5. Enable file sharing.

Q4. What is client-server network? Also describe its advantages & disadvantages.

- **Definition:** A centralized network where clients request services from a server.
- **Advantages:**
  - Centralized control.
  - High security.
  - Easy backup & data recovery.
- **Disadvantages:**
  - Expensive setup.
  - Server failure = network failure.

🌟 Extra Important Questions

Q1. Define LAN, MAN, WAN.

- **LAN**: Local Area Network (office, school).
- **MAN**: Metropolitan Area Network (city).
- **WAN**: Wide Area Network (Internet).

Q2. Explain error control in networks.

- Ensures data is received correctly.
- Types:
  - **Single-bit error**: Only one bit changes.
  - **Burst error**: Multiple bits change.

Q3. Explain multiplexing and demultiplexing.

- **Multiplexing**: Sending multiple signals over one channel.
- **Demultiplexing**: Splitting received signal back into original streams.