Take-Home Assignment 01 – Answers

1) **List five (05) advantages of computer networks and briefly explain them in your own words**
   - **Resource Sharing** – Users can share devices like printers, scanners, and internet connections, reducing cost and effort.
   - **Data Sharing** – It's easy to share files and information between computers over a network.
   - **Communication** – People can send messages or have video/audio calls using applications like email, Zoom, or WhatsApp.
   - **Data Backup** – Files can be stored and backed up on remote servers, making recovery easy if a computer crashes.
   - **Remote Access** – You can access your files or systems from anywhere using a network, especially useful for remote work or learning.

2) **List three (03) disadvantages of computer networks and briefly explain them in your own words**
   - **Security Risks** – Hackers can steal sensitive data if the network is not protected properly.
   - **Viruses and Malware** – One infected system can spread viruses across the entire network.
   - **Network Failures** – If the main server or connection fails, the whole network can go down, affecting all users.

3) **Compare and contrast LANs against WANs under any three (03) criteria.**

Criteria	LAN (Local Area Network)	WAN (Wide Area Network)
Coverage	Small area like a home, school, or office	Large area like cities, countries, or globally
Speed	Generally faster due to limited distance	Slower compared to LANs due to long distances
Cost	Low setup and maintenance cost	Expensive due to high-tech equipment and setup

4) Briefly explain the following terms in your own words.

    a) **Circuit Switching** – A dedicated communication path is created between two devices before they talk, like in traditional phone calls.

    b) **Packet Switching** – Data is broken into small packets and each packet travels separately to the destination, like how emails are sent over the internet.

    c) **Bandwidth** – It's the maximum amount of data that can pass through a network connection in a given time, like the size of a road for data.

    d) **Protocol** – A set of rules that decides how data is sent and received in a network, like a language both devices understand.

5) Compare and contrast the OSI and TCP/IP models under five (5) different criteria.

Criteria	OSI Model	TCP/IP Model
Layers	Has 7 layers	Has 4 layers
Development	Developed by ISO	Developed by the U.S. Department of Defense
Usage	Mostly used as a teaching/reference model	Used practically in real-world networking
Protocol Dependency	Protocol independent	Protocol specific (uses standard protocols like TCP, IP)
Flexibility	More flexible in updates and separation	Less flexible due to closely connected layers

6) List three (03) advantages of the OSI model over the TCP/IP model.

- **Clear separation of layers** – Makes it easier to understand and troubleshoot problems.
- **More detailed** – OSI has more layers, which helps in learning and identifying specific issues.
- **Protocol independence** – Works with any protocols, not limited to a specific set.

7) List three (03) advantages of the TCP/IP model over the OSI model.

- **Real-world use** – TCP/IP is used in the actual internet and networking systems.
- **Efficient performance** – Works faster and more reliably in real networks.
- **Built-in protocols** – Already has standard protocols (like TCP and IP), so it's ready to use.

8) List three (03) disadvantages of computer networks and briefly explain them in your own words.

- **Privacy Issues** – Personal data might be viewed or stolen by unauthorized people on the network.
- **Maintenance Cost** – Networks need to be maintained and upgraded regularly, which can be costly.
- **Dependency** – If the network fails, people can't work or access important resources.