2nd Assignment
Subject: Computer Network
Roll-call: WRC078BEI047

Q1. Differences Between OSI Model & TCP/IP model.

Ans: The differences between OSI model and TCP/IP model are:-

OSI model	**TCP/IP model**
It is seven layered reference model.	It is four layered model.
Internetworking is not supported.	TCP/IP supports Internet working.
It clearly distinguishes between services, Interfaces and protocols.	This model fails to distinguish between services, interface and protocols.
Network layer provides both connectionless and connection-oriented services.	The internet layer provides connectionless services.
Transport layer provides only connection-oriented services.	Transport layer provides both connection-oriented and connectionless services.
Protocols in the OSI model are better hidden and can be replaces relatively easily.	Protocols in TCP/IP are not hidden and thus cannot be replaced easily.

Q2. Differences between client server and peer to peer network.

Ans: The differences between client server and peer to peer network are: -

Client server network	Peer to peer network
A central server provides resources and services to multiple clients, which depend on this server for operations.	All nodes (peers) in the network have equal status and can act as both clients and servers.
Servers manage resources and handle client requests, while clients request and use the services provided by the server.	Resources and services are distributed among all peers, with each node potentially sharing its own resources.
Security is easier to manage and enforce due to the central control point	Security can be more complex due to the lack of a central authority, requiring cooperation among peers for security measures.
Typically scaled by upgrading server hardware and software; easier to manage centrally.	Scales horizontally by adding more peers, with increased resources as more nodes join.

Q3. What are the seven layers of OSI model, What is the function of each layer?
Ans: The OSI (Open Systems Interconnection) model has seven layers, each with specific functions:

1. **Physical Layer**:
   - Function: Deals with the physical connection between devices, including the transmission of raw bitstreams over a physical medium. It defines hardware elements such as cables, switches, and network interface cards.

2. **Data Link Layer**:
   - Function: Provides node-to-node data transfer, error detection and correction, and flow control. It manages the link between directly connected nodes and frames the data.

3. **Network Layer**:
   - Function: Handles routing and forwarding of data packets between nodes on different networks. It determines the best path for data transfer and manages logical addressing (IP addresses).

4. **Transport Layer**:
   - Function: Ensures reliable data transfer between end systems, including error recovery and flow control. It provides end-to-end communication services and manages data segmentation and reassembly.

5. **Session Layer**:
   - Function: Manages sessions or connections between applications. It establishes, maintains, and terminates sessions, ensuring orderly data exchange and synchronization.

6. **Presentation Layer**:
   - Function: Translates data between the application layer and the network. It handles data encryption, compression, and translation of data formats (e.g., from EBCDIC to ASCII).

7. **Application Layer**:
   - Function: Provides network services directly to end-user applications. It includes protocols for specific data communications services on a network, such as HTTP for web browsing, FTP for file transfer, and SMTP for email.

Q4. What are the principles behind OSI model.

Ans: The OSI model is based on several key principles:

1. **Layered Approach**: The model is divided into seven distinct layers, each with specific functions, to reduce complexity by isolating different network tasks.
2. **Interoperability**: Ensures that various hardware and software from different vendors can work together by adhering to standardized protocols.

3. **Modularity**: Each layer operates independently, so changes in one layer typically do not affect others, allowing for easier updates and enhancements.
4. **Encapsulation**: Data is packaged with the necessary protocol information as it moves through the layers, allowing each layer to add its own headers and trailers.
5. **Decoupling**: Separates the network architecture into layers so that services provided by one layer can be designed and modified independently of others.
6. **Standardization**: Promotes the use of universally accepted protocols and interfaces, facilitating communication and integration across diverse systems.
7. **Comprehensive Model**: Covers all aspects of network communications, from physical connections to application-level interactions, providing a complete framework for understanding and designing networks.