**1.Explain the utility of layered network architecture. Discuss protocols and standards in brief.**

Layered network architecture, commonly known as the OSI (Open Systems Interconnection) model or TCP/IP (Transmission Control Protocol / Internet Protocol) model, is a conceptual framework used to understand and design computer networks. It divides the communication process into several different layers, each responsible for specific functions.

The utilities of layered network architecture are as follows:

* **Modularity:** By dividing the network functionality into separate layers, the complexity of network design and complexity is reduced. Each level can be developed, maintained and modified individually, allowing for easier troubleshooting and upgrades.
* **Interoperability:** Layers define standard interfaces, protocols and procedures for the communication between different network components.
* **Abstraction:** Layers provide a level of abstraction, hiding the complexity of lower layers from higher layers. This abstraction allows the developers to focus on specific aspects of network functionality without needing to understand the underlying details of every layer.
* **Flexibility:** Layered architecture allows for the development of new protocols and technologies within a specific layer without affecting the functionality of other layers.

Layers of the OSI model:

1. Physical Layer – Deals with physical transmission of data over the network medium.
2. Data-Link Layer – This layer establishes, maintains, and terminates connections across the physical medium.
3. Network Layer – This layer handles routing and forwarding of data packets between different networks.
4. Transport Layer – This layer ensures reliable and orderly delivery of data between endpoints.
5. Session Layer – This layer establishes, manages and terminates sessions between applications.
6. Presentation Layer – Responsible for data representation.
7. Application Layer – Provides network services directly to user applications.

2.Compare OSI and TCP/IP reference model.

3.What are the responsibilities of the network layer and transport layer in the Internet model?

4.How do the layers of the TCP/IP model correlate to the layers of the OSI model?

5.Briefly describe TCP/IP model.

6.What are the responsibilities of the Physical layer and Data Link layer in the Internet model?