**BIT 2204 SCT212-0147/2022 ASSIGNMENT 1**

**DIFFERENCES AND SIMILARITIES BETWEEN THE OSI MODEL AND THE TCP/IP MODEL**

The Open Systems Interconnection (OSI) model and the Transmission Control Protocol/Internet Protocol (TCP/IP) model are used to describe how network protocols interact and work together to provide network services and facilitate communication across a network. The following are some of the similarities and differences between the two models:

**Similarities**:

1. Both have a layered structure: Both the OSI and TCP/IP models adopt a layered approach to network communication which divides the networking process into distinct layers, each responsible for specific functions.

2. Data Encapsulation: Both models utilize data encapsulation, which involves adding headers or trailers to data at each layer. Encapsulation ensures that data is properly formatted for transmission and reception, and that it’s secure.

3. Both models allow a manufacturer to make devices and network components that can coexist and work with the devices and components made by other manufacturers

4. Both models reference already defined standards and protocols. For example, the Ethernet standards were already defined by IEEE before the creation of these models. So instead of defining them again both models used them as IEEE Ethernet standards

5. In both models, a single layer defines a particular functionality and sets standards for that functionality only.

**Differences:**

1. Number of Layers:

OSI Model consists of seven distinct layers, providing a more granular view of network functions. These layers are the Physical, Data Link, Network, Transport, Session, Presentation, and Application layers while TCP/IP Model has four layers, which are the Network Interface (or Link), Internet, Transport, and Application layers. This simplified structure is more aligned with the architecture of the internet.

2. Standardization vs. Implementation:

OSI Model primarily serves as a conceptual framework and reference model. It is not directly implemented in practice but influenced the development of various protocols while TCP/IP Model not only provides a conceptual framework but also represents the actual protocol suite used for internet communication. The layers closely correspond to real-world protocols, such as Ethernet, IP, TCP, and HTTP.

3. Origin and Development:

OSI Model was developed by the International Organization for Standardization (ISO) in the 1970s, the OSI model aimed to create a universal networking framework. However, it did not gain as much popularity as the TCP/IP model while the TCP/IP Model was developed by the U.S. Department of Defense in the 1970s, the TCP/IP model was designed for the ARPANET, the precursor to the internet. It has become the actual standard for internet communication.

4. Scope:

OSI Model was designed to be universal and applicable to all types of network communication, including those beyond the internet while TCP/IP Model was specifically created for the internet and is optimized for its requirements, making it highly practical for modern networking.

5. Network layer:

The Network layer of OSI model provides both connection oriented and connectionless service while the Network layer in TCP/IP model provides connectionless service.