**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

**BIT 2204: NETWORK SYSTEMS AND ADMINISTRATION.**

**SCT 212-0102/2022**

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**ASSIGNMENT 1**

***Question: In 300 words, write a write-up on the differences and similarities between the 7-layer OSI reference model and the TCP/IP model.***

The OSI (Open Systems Interconnection) reference model and the TCP/IP model are two different models used to describe how data is transmitted between devices in a network. The OSI model has seven layers, while the TCP/IP model has four layers. Both models were developed in the 1970s and published in the early 1980s. The TCP/IP model is still used today, while the OSI model is no longer used.

Similarities between the OSI and TCP/IP models:

* Both models provide logical ways of networking and use a layered system to process information.
* Both models define protocols in a layer-wise manner.
* Both models have layers that correspond to each other. For example, the physical layer and the data link layer of the OSI model correspond to the link layer of the TCP/IP model. The network layers and the transport layers are the same in both models. The session layer, the presentation layer, and the application layer of the OSI model together form the application layer of the TCP/IP model.

Differences between the OSI and TCP/IP models:

* The OSI model has seven layers, while the TCP/IP model has four layers.
* The TCP/IP model is a protocol-oriented standard, while the OSI model is a generic model based on the functionalities of each layer.
* The OSI model distinguishes the three concepts of services, interfaces, and protocols, while the TCP/IP model does not.
* The OSI model is well-documented and easy to understand, while the TCP/IP model is not as well-documented.

Layers of the TCP/IP model:

1. Application layer: This layer is where data originates on the sender's side. Applications are used to create the data. For example, a web browser generates the data that gets sent through the rest of the layers.
2. Transport layer: This layer is responsible for the reliable delivery of data between devices. It ensures that data is transmitted without errors and in the correct order.
3. Network layer: This layer is responsible for the logical addressing and routing of data between devices. It determines the best path for data to travel from the sender to the receiver.
4. Physical layer: This layer is responsible for the physical transmission of data between devices. It defines the physical characteristics of the network, such as the type of cable used and the voltage levels used to represent data.

In conclusion, the OSI and TCP/IP models are both used to describe how data is transmitted between devices in a network. While they have some similarities, they also have some key differences, such as the number of layers and the level of documentation. The TCP/IP model is still used today and has four layers: the application layer, transport layer, network layer, and physical layer.