



Bahria University
Discovering Knowledge

Data Communication & Networking

Quiz 1

Note: All questions are compulsory, and plagiarism should not be more than 16%.

1. What is TCP/IP reference model?

2 Marks

The TCP/IP model is a brief adaptation of the OSI model.

This is most generally utilized protocol for networks all through the world. This innovation is espoused as the worldwide standard of systems networking. This is the combination of two fundamental protocols the transmission control and the internet. This innovation is utilized by the internet, intranets and extranets.

Many operating frameworks/systems & networking programs now a days are reconcilable to this architecture. At present the greater part of the organizations are espousing this leading-edge technology. This protocol comprises of five fundamental layers(including Data-Link Layer) which can be related with seven layers of ISO-OSI reference model

As per TCP/IP reference model all out functionality of communication process is isolated into four unique layers

Process -->Application Layer

Host-to-Host -->Transport Layer

Internet Layer

Network Access(Host to Network Layer)

The application layer:

The TCP/IP model does not comprise of session or presentation layers. No need for them was seen, so they were excluded. Ordeal with a OSI model has evince this view correct, they are of little be used to most applications. On top of transport layer is the application layer. It contains every one of the higher-level protocols. The mid ones included virtual terminal (TELNET), file transfer (FTP), and electronic mail (SMTP). The virtual terminal protocol permits a client to sign on to a distant system and work there. The file transfer protocol gives an approach to move information proficiently from one system to the other.

Transport layer:

The layer above the internet layer is called transport layer. It is intended to permit peer entities on the source and destination hosts to have a communication, like as in the OSI transport layer. Two end-to-end transport conventions have been characterized here. The first TCP is a dependable connection-oriented protocol that permits a byte stream emanate one system to be declined without error on some other system on the internet.

The Internet layer: This layer holds the entire architecture together. Its responsibility is to allow the host to infuse packets into any network and have them globetrot independently to the destination. They may ensue in a different order as to which order they were sent, in which case it is the work of higher layers to reorganize them. The internet layer stipulate an official protocol and packet format known as Internet Protocol (IP). The responsibility of internet layer is to transfer IP to the directed destination.

Host to Host Layer(Network Access Layer)

Below internet layer is an extraordinary void. The TCP/IP model does not really say much about what happens here, except to specify that the host needs to communicate with the network using some protocol so it can send IP packets to it.

This protocol is not demarcated and differ from one host to another host and one network to another network.

2. Explain OSI Layers and write down name of protocols for each layer 2 Marks

The Open Systems Interconnection (OSI) model is a hypothetical and conceptual method of categorizing and discussing the complex process of sending information on a network. OSI model is the most broadly used technique for discernment and discussing about network communications. Nonetheless, it is just a hypothetical model that characterizes standards for software engineers and network admins, not a model of actual somatic physical layers. The OSI reference model cleave network communication into seven layers. Each layer covers diverse network activities, hardware, or protocols. The table below addresses the layered architecture of the OSI reference model.

Number	Layer Name	Layer Functions
7	Application layer	Network process to applications
6	Presentation Layer	Data representation and encryption
5	Session Layer	Inter-host communication
4	Transport Layer	End-to-end connections and reliability
3	Network Layer	Path determination and logical addressing (IP)
2	Data Link Layer	Physical addressing (MAC & LLC)
1	Physical Layer	Media, signal, and binary transmission

3. Explain the following terms:

4 Marks

a. Packet Switching

Packet Switching is a Routing process in which the messages are divided into packets, each packet having the addresses necessary for its routing; in the nodes of the

network, these packets are received in a queue and retransmitted, after analysis of the addresses, on the appropriate transmission channel. Upon arrival, the messages are reconstructed from the received packets. Since a packet occupies one channel only during transmission, the channel is then available for transmission of other packets belonging to either the same message or other messages. During packet-switched data transmission, the data to be transmitted are divided into data packets and transmitted independently over the network. These packets are received, stored and retransmitted on the appropriate transmission channel. The nodes of the network are free to determine the route of each packet individually, according to their routing table. The packets transmitted can take different routes and are reassembled on arrival by the destination node. The packets may arrive in a different order than the sending order and may eventually be lost. Mechanisms are integrated into the packets to allow ordered reassembly and retransmission in case of packet loss (Mitchell, 2018).

b. Circuit Switching

Circuit switching was designed in 1878 in order to send telephone calls down a dedicated channel.

This channel stayed open and being used all through the entire call and couldn't be utilized by any other information or calls

The phone message is sent all together; it isn't separated.

The message shows up in the exact order that it was initially sent.

There are three stages in circuit exchanging:

- Establish
- Transfer
- Disconnect

c. ATM

ATM is an innovation intended for the fast exchange of voice, video, and information on public and private networks making use of cell relay technology.

Fixed-size cells, allowing more proficient exchanging in hardware than is conceivable with variable-length packets

Connection- bound service, allowing routing of cells along the ATM network over virtual connections utilizing basic connection identifiers

Asynchronous multiplexing, allowing effective utilization of transmission bandwidth and intersperse of information of differing priority and size

ATM joins the advantages of circuit with those of packet switching to accomplish these advantages, ATM utilizes the following characteristic:

ATM is an transfer mode where each character is an independent unit with its own beginning and ending bits and a lopsided interval between them. ATM is likewise alluded to as start/stop transmission