COM3032 Computer Networks Midterm Exam **28 April 2023**

1. Please fill in the blanks using the appropriate ones from the terms given below (5 pts each, 40 pts total).
transmission delay, nodal delay, network core, access networks, propagation delay, network edges, processing delay, queuing delay

While network edges consist of edge systems, access networks include wired, wireless communication links. On the other side, the mesh of packet switches and links that interconnects the Internet's end systems is called the network core.

As a packet travels from one node to the subsequent node along the network, the packet suffers from several types of delays. Processing delay is the time required to examine the packet's header and determine where to direct the packet. Queuing delay is the time that a packet waits to be transmitted into the link. The amount of time required to push all of the packet's bits into the link is called transmission delay and the time required to go from the beginning of the link to the receiving node is the propagation delay. Together, these delays accumulate to give a total nodal delay.

2. Please write the answers for the given definitions below (5 pts each, 25 pts total).
a) the protocol to automate the IP configuration (IP address, subnet mask, default gateway, and DNS information): DHCP

b) a software interface through which a process sends messages into, and receives messages from: Socket

c) type of the HTTP connection in which all of the requests and their corresponding responses are sent over the same TCP connection: Persistent

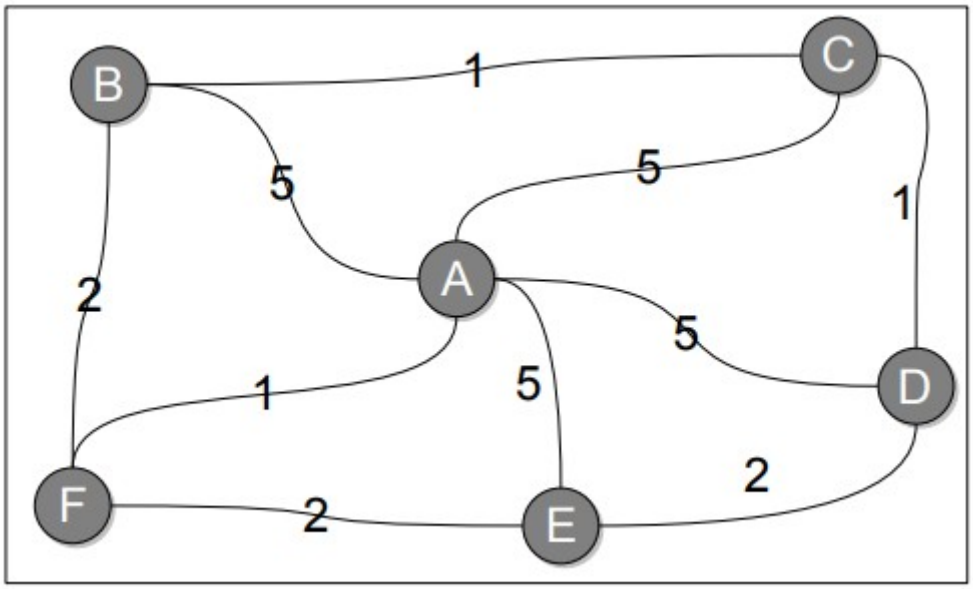
d) the layer that is responsible for process to process delivery in a general network model: Transport

e) the layer that provides the services to user: Application

3. Please explain shortly how a UDP connection is established between the sending and receiving hosts (10 pts).

No connection is established.

4. Please complete the following link state routing table using Dijkstra's algorithm by computing the shortest path from node A to all of the nodes. (25 pts)



Step	*N'*	*D(B),p(B)*	*D(C),p(C)*	*D(D),p(D)*	*D(E),p(E)*	*D(F),p(F)*
0	A	5, A	5, A	5, A	5, A	1, A
1	AF	3, F	5, A	5, A	3, F	done
2	AFB	done	4, B	5, A	3, F	
3	AFBE		4, B	5, A	done	
4	AFBEC		done	5, A		