Sardar Patel Institute of Technology
Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India
(Autonomous College Affiliated to University of Mumbai)

End Semester Examination

Max. Marks: 60 **Duration: 2 Hrs**
Class: T.E. **Semester: VI**
Course Code: ET307 & EC307 **Branch: Electronics/EXTC**
Name of the Course: Computer Communication Networks

Instructions:
(1) All questions are compulsory
(2) Draw necessary diagram
(3) Assume suitable wherever necessary.

Q No.		Max. Marks	BL	CO	PI
Q1 a)	It's the year 1990. Vivek and Pujan are 4 hops apart on a **datagram packet-switched network** where each link is 100-mile-long. Per-hop processing delay is 10 micro-seconds. Packets are 1500 bytes long. All links have a transmission speed of 56kbit/s (original speed of Internet backbone links in the 80s). The speed of light in the wire is approximately 125,000 miles/s. If Pujan sends a 10-packet message to Vivek, a) How long will it take Vivek to receive the message up to the last bit (measured from the time Pujan starts sending)? b) 32 years later, all is the same, except that link transmission speed now is 1Gbit/s. How long will it take Vivek to receive the message up to the last bit (measured from the time Pujan starts sending)?	5	4	CO1	1.2.2
b)	Identify the following to one or more layers of the OSI model: a. reliable process-to-process message delivery b. route selection c. defines frames d. provides user services such as e-mail and file transfer e. transmission of bit stream across physical medium	4	2	CO1	1.3.1
c)	Identify the internet security protocol and give the role of respective protocol as per following: i)Protocol is designed to authenticate the source host and to ensure the integrity of the payload carried in the IP packet. ii)Protocol provides source authentication, integrity, and confidentiality	6	4	CO1	1.3.1

Sardar Patel Institute of Technology
Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India
(Autonomous College Affiliated to University of Mumbai)

End Semester Examination

Max. Marks: 60 **Duration: 2 Hrs**
Class: T.E. **Semester: VI**
Course Code: ET307 & EC307 **Branch: Electronics/EXTC**
Name of the Course: Computer Communication Networks

Instructions:
(1) All questions are compulsory
(2) Draw necessary diagram
(3) Assume suitable wherever necessary.

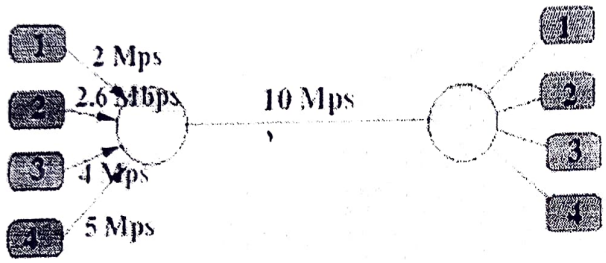
2a)	What are the roles of different layers of enterprise network for design? State Benefits of a Hierarchical Design Model	6	2	CO2	2.1.2
b)	Distinguish between the 2 tier and 3 tier data center networks.	3	3	CO2	2.3.1
c)	An organization have the address 131.12.13.17 i)Identify the IP address class, Show the netid and hostid ii) What is the default mask? iii) What is first address and last address of the network?	3	3	CO2	2.2.2
d)	An organization is granted a block of addresses with the beginning address 14.24.74.0/24. The organization needs to have 3 subblocks of addresses to use in its three subnets as shown below: i)One subblock of 120 addresses ii) One subblock of 60 addresses iii)One subblock of 10 addresses. **OR** Assume that the administrator's requirement is 500 hosts and is using Class A network-id: - 10.0.0.0. Using the concept of Fixed Length Subnet Mask, design the subnet i.e., find the number of subnets, valid subnet range and customized subnet mask.	8	4	CO2	2.2.3
3a)	What are the factors that causes congestion? Also provide briefing on any two **congestion detection** mechanisms.	5	3	CO4	2.2.3

Sardar Patel Institute of Technology
Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India
(Autonomous College Affiliated to University of Mumbai)

End Semester Examination

Max. Marks: 60 **Duration: 2 Hrs**
Class: T.E. **Semester: VI**
Course Code: ET307 & EC307 **Branch: Electronics/EXTC**
Name of the Course: Computer Communication Networks

Instructions:
(1) All questions are compulsory
(2) Draw necessary diagram
(3) Assume suitable wherever necessary.

	OR  Compute the fair share of each unsatisfied flow using Max-Min Fairness algorithm				
(b)	The following is a dump of a UDP header in hexadecimal format. 0045DF000058FE20 a. What is the source port number? b. What is the destination port number? c. What is the total length of the user datagram? d. What is the length of the data? e. Is the packet directed from a client to a server or vice versa?	5	3	CO4	2.2.2
4a)	Assume that a network administrator wants to create one set of (forwarding) rules and applications for one group of users, and an entirely different set of (forwarding) rules and applications for another set of users. Is this possible? If yes, support your justification with a	5	5	CO4	2.1.2

Sardar Patel Institute of Technology
Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India
(Autonomous College Affiliated to University of Mumbai)

End Semester Examination

Max. Marks: 60 **Duration: 2 Hrs**
Class: T.E. **Semester: VI**
Course Code: ET307 & EC307 **Branch: Electronics/EXTC**
Name of the Course: Computer Communication Networks

Instructions:
(1) All questions are compulsory
(2) Draw necessary diagram
(3) Assume suitable wherever necessary.

	neat, labelled diagram. **OR** Network virtualization function provide seamless fully network communication service. Do you agree? justify				
b)	What are the challenges of symmetric key cryptography? Darshan sends message "**HOSPITALITY**" to Parth and uses key "**Treat**" to encrypt the message. Using substitution cypher, perform encryption and decryption process for the same. **OR** How VPN technology use the global Internet for both intra- and inter-organization communication and maintained privacy in their intra-organization communication.	5	4	CO4	2.2.3
c)	Identify the threat actors based on statements given below and provide a briefing about them in a line or two: a) A group that is strongly motivated by ideology. b) A group who wants to attack computers, yet they lack the knowledge of computers and networks needed to do so. c) Sell their knowledge of a vulnerability to other attackers or governments.	5	2	CO4	2.1.2