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: 100 **Duration: 3Hr**
Class: T.E. **Semester: VI**
Course Code:EC307 **Branch: ETRX&EXTC**

Name of the Course: Computer Communication Networks

Instruction:
(1) All questions are compulsory
(2) Draw necessary diagram

Q No.		Max. Marks	BL	CO
Q1 a)	i)What role does OSI play in computer networks? ii)Can you explain why the layers of the OSI model are important to the network administrator?	5	3	CO1
b)	Give the real time application of the following topology a)Bus b)Star c)Ring d) Mesh e)point to point	5	2	CO1
c)	It's the year 2000. Shreya and Riya are 4 hops apart on a **datagram packet switched network** where each link is 161Km-long. Per-hop processing delay is 5 micro-seconds. Packets are 2Kilobytes 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 Shreya sends a 10-packet message to Riya, How long will it take Riya to receive the message up to the last bit (measured from the time Shreya starts sending)?	5	3	CO1
	Dr. Dayanand is asked to allocate valid IP addresses to 250 workstations in S.P.I.T. Which class of IP address will he use for subnetting and why? **(OR)** What is a subnet mask? explain with suitable example. Using default subnet mask, compute the network-id and host-id for the following IP addresses: 192.168.1.1 200.161.15.2 10.16.8.3	5	3	CO1
Q 2 a)	Suppose you have been hired as a cloud network engineer for an organization currently using a complex network architecture, which is becoming difficult to manage and has a very high maintenance cost. The company is on full-scale expansion and plans to expand its operations to multiple locations. The company is open to adopting a public cloud vendor. The company also plans to solve the networking hardware solution		5	CO2

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: 100
Class: T.E.
Course Code:EC307

Duration: 3Hr
Semester: VI
Branch: ETRX&EXTC

Name of the Course: Computer Communication Networks

Instruction:
(1) All questions are compulsory
(2) Draw necessary diagram

	within the office premises. The management has tasked you with designing a new enterprise cloud network architecture to support the company's growth and ensure seamless connectivity between all locations and also solve the office networking problem. a) Describe the key components and functions of the proposed 3-tier cloud network architecture on the cloud. Focus on 3-tier architecture on a high level and also consider hybrid connectivity. Try explaining with a diagram. b) Develop a detailed plan for implementing the new architecture, including hardware and software requirements, network topology, and security measures for office premise networking. Explain the hardware that you will procure and why? Also, mention other hardware components that will be connected to each layer and across the office premise. Try explaining with a diagram. c) What factors will you consider in your checklist to say ensure the networking piece for the organization is ready to use?	4 4 2	5	CO2
b)	Compare between 2 tier and ideal 2 tier enterprise network. Justify that 2-tier enterprise network is suitable for medium scale organization.	5	3	CO2
c)	What are flat design networks? Discuss in brief. Compare the same with existing scalable networks.	5	2	CO2
Q.3a)	i) Comment on the TCP segment in which the value of the control field is a. 000000 b. 000001 c. 010001 ii)An IP datagram is carrying a TCP segment destined for address 125.1.2.3/16. The destination port address is corrupted and it arrive at destination 125.1.2.5/16. How does the receiving TCP react to this	5	3	CO3

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: 100
Class: T.E.
Course Code:EC307

Duration: 3 Hr
Semester: VI
Branch: ETRX&EXTC

Name of the Course: Computer Communication Networks

Instruction:
(1) All questions are compulsory
(2) Draw necessary diagram

error?OR

OR

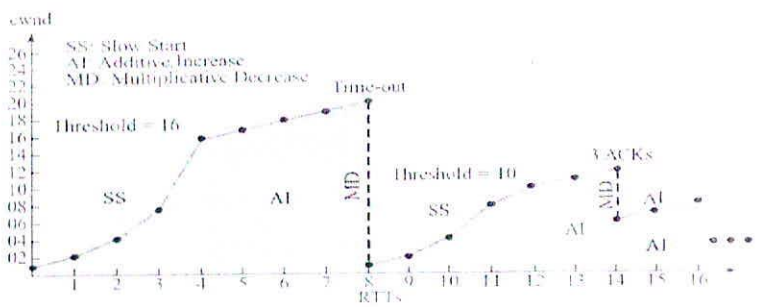
a) calculate the checksum of a simple UDP user datagram

153.18.8.105		
171.2.14.10		
All 0s	17	15

1087	13
15	All 0s

T	E	S	T
I	N	G	All 0s

b) Interpret the following diagram w.t.t. congestion control using TCP. — 5 — 4 — CO3



c) i. Assuming — 5 — 4 — CO3

1. Average object size = 100,000 bits,
2. Average request rate from institution's browsers to origin servers is 15/sec.

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: 100
Class: T.E.
Course Code:EC307

Duration: 3 Hr
Semester: VI
Branch: ETRX&EXTC

Name of the Course: Computer Communication Networks

Instruction:
(1) All questions are compulsory
(2) Draw necessary diagram

	3. Delay from institutional router to any origin server and back to router is 2 sec and 4. Institutional cache LAN speed is 10 Mbps. **Compute:** 1. Utilization on LAN 2. Utilization on access link 3. Total delay for CASE A: the client-server architecture uses 1.5 Mbps access link CASE B: the client server architecture installs cache with a 10 Mbps access link. Assume the hit rate to be 50%. Using hybrid of client-server and P2P architectures, discuss the working any 2 real time applications in brief.	5	2	CO3
Q.4 a)	Give the answer of the following question w.r.t. Software Defined Network i)Justify SDN controller behaves like mind in SDN architecture. ii) What is the role of Openflow protocol in SDN? iii) What is Southbound interface in Software Defined Network? iv)What is Northbound Interface in SDN?	10	3	CO4
b)	i)What is a) Hypervisor b) Network Virtualization? Explain with a relevant example. ii)Also discuss how server virtualization is related to Network Function Virtualization (NFV)?	10	2	CO4
Q5 a)	i)Bob wants to send message "**HELLO WORLD**" to Alice and uses sequ nce "**5 4 3 2 1**" to encrypt the message. Identify and use suitable cryptographic algorithm to show the encryption	5	4	CO4

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

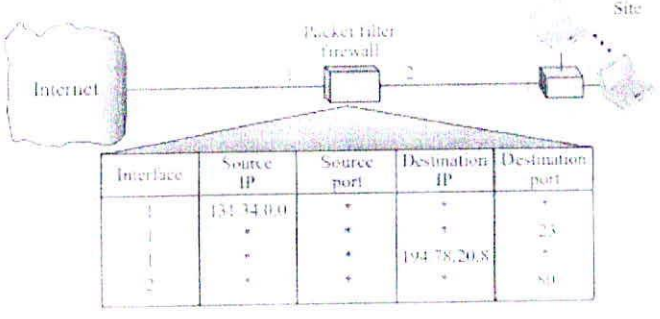
End Semester Examination

Max. Marks: 100
Class: T.E.
Course Code:EC307

Duration: 3 Hr
Semester: VI
Branch: ETRX&EXTC

Name of the Course: Computer Communication Networks

Instruction:
(1) All questions are compulsory
(2) Draw necessary diagram

	and decryption process between Bob and Alice. ii) What is CIA triads in network security? discuss in brief.	5	2	
b)	Choose the correct choice and **justify it w.r.t. VPN** i)What are three reasons that an organization with multiple branch offices and roaming users might implement a Cisco VPN solution instead of point-to-point WAN links? (Choose three.) A. reduced cost B. better throughput C. broadband incompatibility D. increased security E. scalability F. reduced latency ii)Which IPsec security protocol should be used when confidentiality is required? A. AH B. MD5 C. PSK D. ESP **OR** Identify the type of firewall from the following table and interpret the table w.r.t. security.  	Interface	Source IP	Source port	Destination IP	Destination port
1	135.34.0.0	*	*	*
1	*	*	*	25
1	*	*	194.78.20.8	*
2	*	*	*	80 | **OR**	6	3	CO4

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: 100
Class: T.E.
Course Code:EC307

Duration: 3 Hr
Semester: VI
Branch: ETRX&EXTC

Name of the Course: Computer Communication Networks

Instruction:
(1) All questions are compulsory
(2) Draw necessary diagram

c)	Explain the different modes of IPsec and give the significance of each with suitable diagram.	4	2	CO4