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

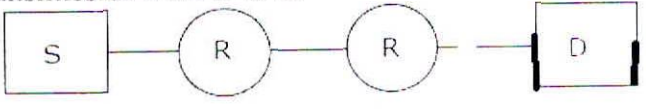
End Semester Examination

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

Q No.		Max. Marks	BL	CO
Q1a)	Assume that source S and destination D are connected through two intermediate routers labeled R. Determine how many times each packet has to visit the network layer and the data link layer during a transmission from S to D. 	5	3	CO1
b)	Identify the cable use to connect the following: 1) PC and Switch 2) Router and PC 3) PC serial port and Router console port 4) PC and PC.5) router and switch	5	2	CO1
c)	Justify, router is intelligent device with suitable diagram	5	3	CO1
d)	Shrutiman joins a company as a Network Engineer and finds that there are 4 departments with following information: - (Department1)–IP address: 120.14.22.16 and Mask:255.255.128.0 (Department2)–IP address: 140.11.36.22 and Mask:255.255.255.0 (Department3)–IP address: 141.181.14.16 and Mask:255.255.224.0 (Department4)–IP address: 200.34.22.156 and Mask:255.255.255.240. How will Shrutiman compute the network-address and host Address to be allocated to each department? **(OR)** What is the priority bit concept in IP addressing? Also use the concept to compute valid IP address range for class A, B and C	5	3	CO1

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

Q a) 2	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 within the office premise. 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)	Tanya, the network administrator decides to adopt anyone of the following network network design for designing a campus LAN: a. Flat network design b. Hierarchical one tier network design c. Hierarchical two-tier network design d. Hierarchical three tier network design. Discuss the above network designs in brief. Also, which of the above designs will be more flexible for Tanya and why?	5	4	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: 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)	What is the limitation of 2 tier enterprise network? How it will fulfill from 3 tier enterprise network	5	3	CO2
Q.3	a) Compare between TCP and UDP OR a) Given a DUMP of a UDP header in hexadecimal format 03 61 10 1A 10 4C Y2 42. Find the following: - 1. Source port number? 2. Destination port number? 3. Length of user datagram? 4. Length of the data?	3	3	CO3
b)	Show the message transfer phase from aaa@xxx.com to bbb@yyy.com. The message is "Good morning my friend." Show the connection termination phase from aaa@xxx.com to bbb@yyy.com	2	3	CO3
c)	What do you mean by traffic shaping? How the token bucket algorithm is prefeered over leacky bucket algorithm in traffic shaping?	5	2	CO3
d)	i)Complete the following transport service requirements of the common internet-based applications in terms of: a. throughput i.e. whether it is elastic/non-elastic; if elastic, mention throughput rate. b. time sensitive or not; if time sensitive, mention the acceptable delay range.	5	4	CO3

Application	Throughput	Time Sensitive
File transfer		
Email		
Real time audio/video		
Instant messaging		
Interactive gaming		

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

	ii)Nowadays almost every web server prefers HTTPs over HTTP. Why?	5	2	CO3
Q.4 a)	Give the answer of the following question w.r.t. Software Defined Network i)How SDN is different from a normal network setup? Draw a suitable diagram. ii)What are the central tasks of the Control Plane with its Network Controller? iii) What is Southbound interface in Software Defined Network? iv)What is Northbound Interface in SDN?	10	2	CO4
b)	i)Can one physical network be split into many distinct virtual networks? Discuss ii) Briefly describe the operation of network function virtualization.	10	2	CO4
Q5 a)	What are the challenges of symmetric key cryptography? Shrutiman wants to send the message "**ENGINEERING**" to Aditya and uses the key "**SPIT**" to encrypt the message. Using Simple Substitution Cipher, generate the encryption key and use the same to key test the decryption process.	10	4	CO4
b)	Justify that IPsec protocol: Authentication Header (AH) and the Encapsulating Security Payload (ESP) Protocol provide authentication and/or encryption for packets at the IP level.	4	2	CO4

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

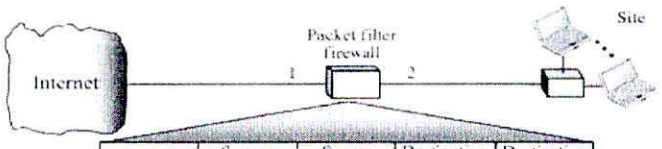
End Semester Examination

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)	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 | 131.34.0.0 | * | * | * | | 1 | * | * | * | 23 | | 1 | * | * | 194.78.20.8 | * | | 2 | * | * | * | 80 |	6	3	CO4