



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

Branch: Electronics and Telecommunication

Name of the Course: Computer Communication Networks

Duration: 2 Hr

Semester: VI

Instruction:

- (1) All questions are compulsory
- (2) Draw necessary diagram

Q No.		Max. Marks	B L	CO
Q1 a)	Router is a intelligent device. Justify with example OR It's the year 1990. Vivek and Pujan are 4 hops apart on a Circuit- 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	2,3	CO1
b)	Which layer of the OSI model is responsible to handle MAC addresses? Also, what is the size of MAC address and how will you identify the vendor of the NIC card? With respect to TCP /UDP services identify the port no. reserved for following applications i) Web browsing ii) File transfer iii) E mail service	5	2	CO1
c)	Institute have 3 department of electronics, Communication and IT. An organization is communicated inter and intra department. Identify the transmission media and topology for intra and inter department.	10	2	CO1
Q2 a)	What are the roles of different layers of enterprise network for design? State Benefits of a Hierarchical Design Model OR Do you agree that CSMA/CA works with both wired as well as wireless networks? Justify your answer with relevant reasoning.	5		CO2
b)	Distinguish between the 2 tier and 3 tier data center networks.	5	3	CO2
c)	What are the fragmentation field in IP datagram? explain the role of each.	5	3	CO2



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(2) Draw necessary diagram

OR

	What is the significance of Default Subnet Mask? Assume IP Address :192.168.1.1 Now Assume that the administrators requirement is 2 Subnets and is using Class C network-id address : 192.168.1.0. Using the concept of Subnetting find the possible of host/subnets and subnet ranges.			
(d)	An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows: i)The first group has 200 medium-size businesses: each need approximately 128 addresses. ii) The second group has 400 small businesses: each need approximately 16 addresses. iii) The third group has 2000 households: each need 4 addresses. Design the subblocks and give the slash notation for each subblock. Find out how many addresses are still available after these allocations.	10	4	CO2
Q3 a)	Explain the any two Congestion control techniques? How Token bucket is advantages over the Leaky bucket for traffic shaping?	10	4	CO2
b)	How control flags of TCP significant for 3-way handshaking?	10	3	CO2
c)	Compare and contrast between the SDN and NVF technology?	5	3	CO4
Q4.a)	Bob wants to send message "HELLO" to Alice and uses key "4" to encrypt the message. Use Mono Alphabetic Substitution algorithm and show the encryption and decryption process between Bob and Alice.	5	5	CO4
b)	What is the role of firewall in VPNs? Discuss different types of firewall in VPN	5	4	CO4
c)	What do you mean by Digital Signature? How it can be used for network security over the conventional signature.	10	4	CO4
d)	What are different types of firewalls? Explain role of packet filter firewall for educational organization.	10	4	CO4