



VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE

Matunga, Mumbai-400 019

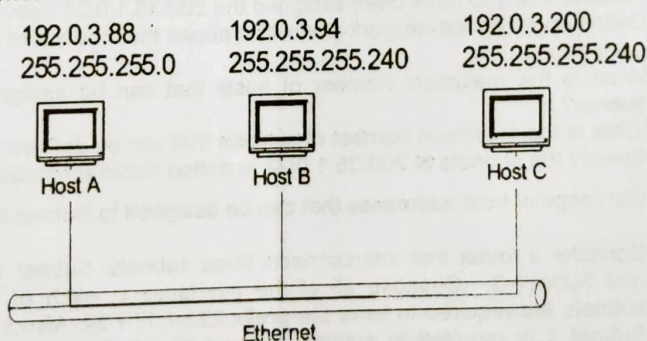
Autonomous Institute affiliated to University of Mumbai

EXAMINATION	End Semester Examination November - December 2019	DATE OF EXAM	13/12/2019
SEMESTER & PROGRAM	SEM -I, M. TECH. COMP / NIMS	TIME	10:00 AM to 1:00 PM
TIME ALLOWED	3 HRS.	MARKS	100
COURSE NAME - (CODE)	TCP / IP and Network Programming (CO5003T / CO5033T)		

Instructions

1. All questions carry equal marks.
2. Figures to the right indicate full marks.
3. Make suitable assumption wherever required but state it clearly

- Q. 1 a IMAP allows users to fetch and download email from a remote mailbox. (05) CO2
Does this mean that the internal format of mailboxes has to be standardized so any IMAP program on the client side can read the mailbox on any mail server? Discuss your answer.
- b "HTTP is designed as a stateless protocol", justify. (05) CO3
- c Consider an Ethernet network with three hosts, Host A, Host B, and Host C (05) CO1
as shown in following figure. No machine is configured as an IP router, and there is no IP router on this network. Assume that the IP addresses and subnet masks are as shown in the figure.



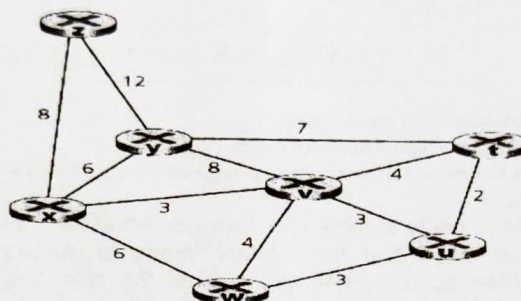
For each of the following IP datagram transmissions, describe if the transmissions will be successful or not.

- i Host C sends an IP datagram to Host A
 - ii Host A sends an IP datagram to Host B
 - iii Host A sends an IP datagram to Host C
 - iv Host B sends an IP datagram to Host A
 - v Host B sends an IP datagram to Host C
- d Would it be possible to configure a router for a 255.255.254.0 Ethernet (05) CO2
and a 255.255.252.0 serial subnet? Does IGRP / RIPv1 support variable
subnetting?

- Q. 2 a Two networks each provide a reliable connection oriented service. One (10) CO1
of them offers a reliable byte stream and other offers a reliable message stream. Are they identical? Justify.

- b Explain the error reporting using ICMP protocol. How does traceroute (10) CO2
program makes use of ICMP to determine the names and addresses of the routers between source and destination?

- Q. 3 a Consider the following network shown below: (07) CO1



Using Dijkstra's algorithm, compute the shortest path from t to all network nodes.

- b Select a subnet mask for 10.0.0.0 / 8 so that there will be at least 16,000 (03) CO1
subnets with at least 700 host addressed on each subnet.
- c Assume that you have been assigned the 200.35.1.0/24 network block. (05) CO1
i Define an extended-network-prefix that allows the creation of 20 hosts on each subnet.
ii What is the maximum number of hosts that can be assigned to each subnet?
iii What is the maximum number of subnets that can be defined?
iv Specify the subnets of 200.35.1.0/24 in dotted decimal notation.
v List range of host addresses that can be assigned to Subnet 6.
- d Consider a router that interconnects three subnets: Subnet 1, Subnet 2, (05) CO1
and Subnet 3. Suppose all of the interfaces in each of these three subnets are required to have the prefix 223.1.17 / 24. Also suppose that Subnet 1 is required to support at least 60 interfaces, Subnet 2 is to support at least 90 interfaces, and Subnet 3 is to support at least 12 interfaces. Provide three network addresses (of the form a.b.c.d / x) that satisfy these constraints.
- Q. 4 a Explain how Network Security can be achieved. (10) CO3
b Explain the working principles of DNS. (10) CO2
- Q. 5 a Write a java code for socket programming where client sends a message (10) CO4
"Report is on your desk." and server receives and prints it.
- b Internet grew in terms of number of nodes, applications and users. The (10) CO2
need for multimedia communication over the internet emerged. Animation, voice and video clips are now common on Internet. To support the multimedia networking products which protocols have been designed? Explain in detail.



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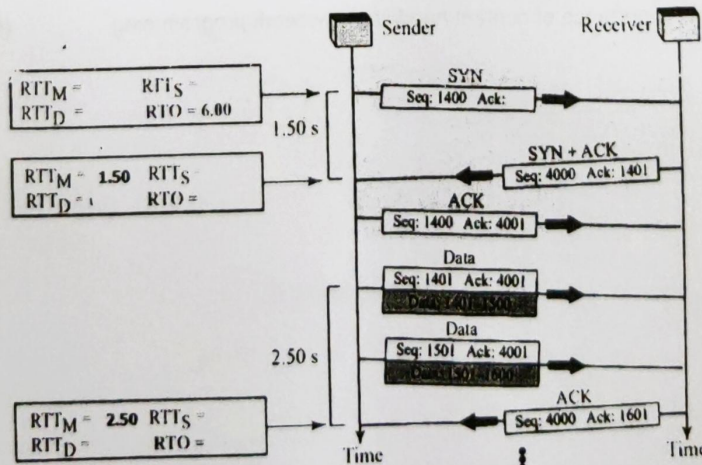
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EXAMINATION	End Semester Examination December 2019	DATE OF EXAM	13/12/2019
SEMESTER & PROGRAM	Sem-I, First Year M Tech Software engineering	TIME	10am to 1pm
TIME ALLOWED	3 HRS.	MARKS	100
COURSE NAME - (CODE)	TCP/IP and Network Programming (CO5063T)		

- Instructions
1. All questions carry equal marks.
 2. Figures to the right indicate full marks.
 3. Assume suitable data wherever necessary.

- Q.1 a. One of the addresses in a block is 110.23.120.14/20. Find the number of addresses in the network, the first address and the last address. (5) [CO1]
- b. A company is granted the site address 201.70.64.0 (class C). The company needs six subnets. Design the subnets. (5) [CO1]
- c. Differentiate between Static Vlans and Dynamic Vlans (5) [CO1]
- d. Distinguish between hubs, switches, gateways, bridges, repeaters (5) [CO1]
- Q.2 a. Elaborate the association establishment, data transfer and association termination phase in SCTP protocol. (10) [CO2]
- There is an established association between hosts A and B, and A send to B eight DATA chunks. The initial TSN value for A is 300. So the TSNs of the DATA chunks are from 300 to 307. Let's say that chunks 300, 301, 304, 305 and 307 are delivered successfully and for some reason chunks 302, 303 and 306 are not received by B. This leads to gaps in the transmission. Show the data flow along with the gaps created. At this point B decides to reply with SACK chunk. Identify the SACK chunk parameters:
- (i) Number of gaps created.
- (ii) For each of the gaps calculate the start and end offsets.

b.



(5) [CO2]

Observe the Above diagram, Tcp connection establishment and data transfer phases are shown.

When the SYN segment is sent, there is no value for RTT_M, RTT_S, or RTT_D. The value of RTO is set to 6.00 seconds.

When the SYN+ACK segment arrives, RTT_M is measured and is equal to 1.5 seconds.

When the first data segment is sent, a new RTT measurement starts with 2.50 seconds.

For each step in the diagram, calculate all the missing values.

- c. Illustrate different types of DNS records. (5) [CO2]
- Q.3 a. Justify the statement "ARP request is broadcast and ARP reply is unicast". Discuss the four cases where ARP resolution can be used. (10) [CO2]
- b. Illustrate different ways through which ICMP can inform the source host about the packet loss. (10) [CO2]
- Q.4 a. Discuss the DHCP client transition diagram in detail. (5) [CO2]
- b. Differentiate between: (10) [CO3]
1. Internal and External Bgp sessions .
 2. BGP messages.
 3. Summary link to network LSA and Summary link to AS Boundray LSA
 4. transient link , stub link
- c. Illustrate the following Attacks: (5) [CO3]
- a) IP spoofing and Sniffing
 - b) SYN flooding
- How can they be prevented?
- Q.5 a. Differentiate between stream sockets, datagram sockets and multicast sockets. Illustrate the steps required to perform socket programming. (10) [CO4]
- b. Differentiate between network scanning and vulnerability scanning. (5) [CO3]
- c. State the importance of content handlers in network programming. (5) [CO4]
