


 Course Title: Introduction to computer Network
 Date: June, 9, 2013 (Second term)

 Course Code: CSE 3125
 Allowed time: 3 hrs

 1st year
 No. of Pages: (2)

Remarks: (Answer the following questions... assume any missing data)
Read the rest of the exam before going with the solution, Trust yourself and prove that your are worthy qualified for engineering title
Question No. (1) 5 points each (30 Marks)

Q1-A) What is meant by network architectures, specify the Characteristics that affect it, for each (Characteristics) analyze its effect on the following topology (Star – Bus – Tree – Ring – Mesh)

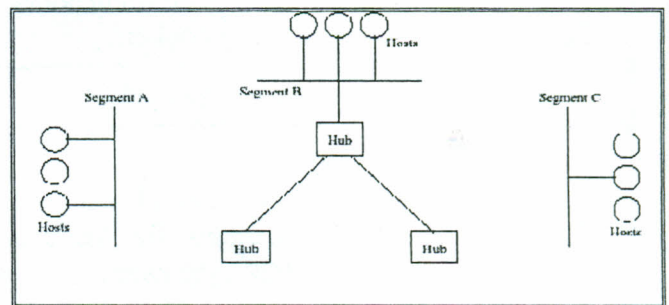
Q1-B) Give one reason; why a telecommunications company might choose to send data using microwave transmission?

Q1- C) Which Layer 1 devices can be used to enlarge the area covered by a single LAN segment? A. Switch B. Router C. NIC D. hub E. Repeater

Q1-D) For the following statements (T/F); and why? (I)Dividing the network message is preferred than transferring the message as a one unit. If this right specify the parameters that considered when the network message fragmented into packet. (II) Using of Packet switched transferee mode can help in improving the link utilization? If this right specify?

Q1-E) Find the relation between I- (Communication schema, LAN Access method, and shared channel access control), II- (Node, host, and workstation). III- a hub, a bridge, a switch, and a router .

Q1-F) A hub is a device that repeats each packet received at a port to all its other ports. Consider an Ethernet LAN with three segments connected together. Is this a topology will work efficiently? If not, why not? Propose a solution.


Question No. (2) 1 point each (15 Marks)

Q2-1) Name the Topology that offers the highest level of redundancy (topology of the internet) , then state its main features

Q2- 2) What does segmentation provide to communication?

Q2-3) What is one way to improve network security?

Q2-4) Which protocol at transport layer is more suitable for streaming media?

Q2-5) What does TCP guarantee that UDP does not (for bytes stream sent in multiple packets)?

Q2-6) What protocol is used to automatically configure PC's that plug into a LAN?

Q2-7) How does a host find out the 32-bit IP address to use for URL "www.ibm.com"?

Q2- 8) Given the IP address, how does a host find the right MAC destination address to use?

Q2- 9) Behind a network address translation (NAT) router, how many servers can use TCP port 80?

Q2-10) A DNS server (UDP) is responding to 10 requests. How many sockets will it need?

Q2-11) An HTTP client has four TCP connections. How many active sockets has it. e.

Q3-12) How many pairs of stations can simultaneously communicate on Ethernet LAN ?

Q2-13) The communication mode that supports data in both directions is -----?

Q2-14) What are the fields in the IP header changes when a datagram is forwarded by a simple router?

Question No. (3) 8 points each (30 Marks)

Q3-A) For a given LAN communication system calculate the time required to transmit (2 M Byte file), Will be one of the following ([i] Coax cable with (10 Mbps) [ii] Multimode Fibre optic (600 Mbps , [iii] Radio wave (2 Mbps)) Then state which of them will be preferable

Q3-B) Suppose that you had to design a 100 Mbps CSMA/CD protocol in which the maximum one-way propagation delay between any two hosts is 100 Micro S. What will you use as the minimum size of a transmitted frame if you wish the transmitting node to detect a collision before completing the transmission of the frame?

Q3-C) Consider two hosts, A and B, connected through a router, R. A Host A has to transmit a 1 MB (= 220 bytes) message to B as a stream of packets with a header size of 64 bytes on each packet. The bandwidth of the links between the hosts and the router is 2 MB/s. In order that the complete message arrives at B as early as possible, what is the packet size that host A should use in sending the message?

Q3-D) Consider an application that transmits data at a constant rate, say at N bits/second, across a single connection. Also assume that the application runs for long periods of time.

- Would a packet-switched network be more appropriate than a circuit-switched network? Why or why not?
- If the application data rate varied widely, would circuit-switching be preferable? Why or why not?

Question No. (4) 3 points each (15 Marks)

Q4-A) List the different types of networks based on the data link layer

Q4-B) What is the subnet for the host IP address 172.16.210.0/22?

Q4-C) A system has an n -layer protocol hierarchy. Applications generate messages of length M Bytes. At each of the layers, an h byte header is added. What fraction of the network bandwidth used by the application is wasted on headers

Q4-D) Given the following packet...

foo header	fung header	yaya header	user data field	foo trailer
5 bytes	10 bytes	20 bytes	Maximum of 150 bytes	4 bytes

Sketch the layered protocol model that applies to this packet. Label each layer with its appropriate name. If the maximum length for the user data field is 150 bytes, what is the overhead (as a percentage) to send a 1600 byte user message?

Q4-E) Sketch the IP packet header and describe the purpose of the fragment offset field, TTL field and protocol field?

b) What is a class B IP address? How many classes B subnets can there be? How many hosts per class B subnet?

Question No. (5) 7 points each (21 Marks)

Q5-A) List the different ways for increasing the speed of the LAN systems, Then Discuss the effect of such increasing on an LAN Network which used the following access methods (CSMA/CD, CSMA/CA, Time slot, token passing)

Q5-B) Explain why a doubling of the speed of the systems on an Ethernet segment may result in decreased network performance. What changes could be made to ameliorate the problem?

Q5-C) In the following figure; 1Mbps IP phone, FTP share 1.5 Mbps link. bursts of FTP can congest router, cause audio packets to be excessively delayed or lost; suggest new router policy needed to treat packets accordingly.

