AUTUMN END SEMESTER EXAMINATION-2016

5th Semester B.Tech & B.Tech Dual Degree

COMPUTER NETWORK

IT-3001

(Regular-2014 & Back-2013 Admitted Batch)

Time: 3 Hours **Full Marks: 60**

Answer any Six questions including question No.1 which is compulsory.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.

1. a) Briefly explain how exactly the flow occurs among various layers in OSI model when you are giving any URL address in any browser. [2 × 10

   b) Differentiate broadcast and multicast. When a station sends a transmission to the MAC address ff:ff:ff:ff:ff:ff, what type of transmission is it?

   c) How performance is improved in CSMA/CD protocol compared to CSMA protocol?

   d) The performance of link state protocol is better than distance vector protocol in a large network. Justify your answer.

   e) If flow control and error control are performed at the data link layer, then why is it also necessary to perform flow and error control at the transport layer?

   f) In TCP, does a FIN segment close a connection in only one direction or in both directions? Explain.

   g) Which of the following can not be mask in CIDR?justify.

   1. 255.225.0.0 2. 255.192.0.0 3. 255.255.255.128

   h) With a neat sketch discuss IP header.

i) If we want to be able to detect two-bit errors, what should be the minimum hamming distance?

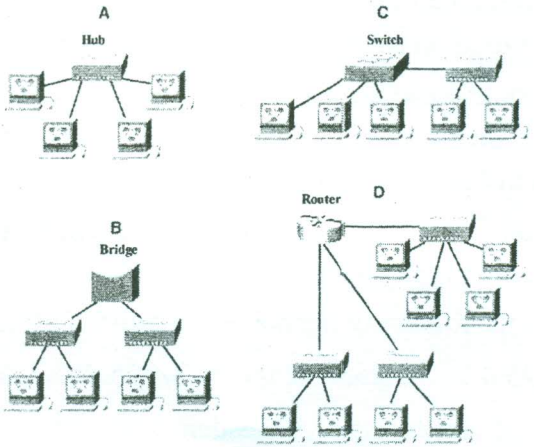
j) During data communication in mobile network whether packet switching or circuit switching is prefered, explain.

2. a) An administrator has given an IP 192.168.1.0/24 and wants to form four networks. The first network with 100 hosts,second network with 60 hosts, third netwok with 10 hosts, and the last netwok with 40 hosts. Disign the subnets and findout whether it is feasible or not. If not suggest a network id with netmask. [4

b) Differentiate switch and hub. Explain, how data communication is carried out using star topology with central node both as a switch or a hub. [4

3. a) What is ICMP protocol and how it is used in ping utility? [4

b) In the following exhibit, identify the number of collision domains and broadcast domains in each specified device. Each device is represented by a letter:(**A.** Hub **B.** Bridge **C.** Switch **D.** Router) [4



4. a) Assume that the timeout values in Selective Repeat(SR) protocol is sufficiently long such that 5 consecutive data segments and their corresponding ACKs can be received (if not lost in the channel) by the receiving host (Host B) and the sending host (Host A) respectively. Suppose Host A sends 5 data segments to Host B, and the 2nd segment (sent from A) is lost. In the end, all 5 data segments have been correctly received by Host B. [4

(a) How many segments has Host A sent in total and how many ACKs has Host B sent in total? What are their sequence numbers?

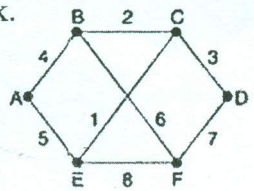
(b) If the timeout value is longer than 5 RTT, then calculate the time taken by SR protocol to successfully deliver all the five data segments?

b) What do you mean by congestion control? Explain the methods involved in TCP slow start to avoid congestion. [4

5. a) Explain Addressing and Channel access control mechanism for Ethernet LAN. [4

b) Explain in detail, all the headers responsible for Fragmentation and Reassembly of datagram. Why reassembly of datagram happens at the end host not at the intermediate routers? Justify. [4

6. a) Construct the routing table at node A using link-state routing protocol to determine shortest paths from node A to all other nodes in the network. [4



b) Find the code word using hamming code method for the data bits 101011101111. [4

7. a) How a file is distributed in P2P and justify how P2P is faster than centralized file distribution. [4

b) In ftp which entity starts the control connection and which entity the data transfer connection in active mode of communication. Justify why there are two modes of communication [4

8. Answer any four questions [4 × 2

a) RIP vs OSPF

b) count to infinity

c) Connection oriented socket

d) Fast ethernet vs Gigabit Ethernet

e) ARP vs RARP

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