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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

V SEMESTER B.TECH (COMPUTER SCIENCE AND ENGINEERING)
DEGREE(MAKEUP) EXAMINATIONS, DEC-2019
SUBJECT : COMPUTER NETWORKS(CSE 3103)
REVISED CREDIT SYSTEM
DATE: 21-12-2019

TIME:03 HOURS MAX.MARKS : 50

Instructions to Candidates:

- Answer ALL FIVE FULL questions.
- Missing data, if any, may be suitably assumed.

1A. What are the two types of services that the Internet provides to its applications? What are some of characteristics of each of these services? 3M

1B. Distinguish between a timeout event and three-duplicate-ACKs event. Which one is a stronger sign of congestion in the network? why? 3M

1C. Suppose Alice with a Web-based e-mail account (such as Yahoo! mail or Hotmail) sends a message to Bob, who accesses his mail from his mail server using POP3. Discuss how the message gets from Alice's host to Bob's host. Be sure to list the series of application-layer protocols that are used to move the message between the two hosts. 4M

2A. Two neighbouring nodes A and B use sliding window protocol with 3 bit sequence number. As the ARQ mechanism Go Back N is used with window size of 4. Assume A is transmitting and B is recieving, show window position for the following events:- 3M

1. Before A sends any frame.
2. After A sends frame 0,1,2 and recieves acknowldegment from B for 0 and 1.

2B. The Ssthreshold value for TCP Tahoe TCP station is set to 16. Initial CWND=1 and TCP starts with slow start phase and timer times out during 8th RTT. Represent the problem through proper graph and answer the following: 4M

1. CWND size during 3rd , 7th ,8th ,11th ,12th RTT.
2. SSThreshold value at 5th and 10th RTT.

2C. Explain the three way handshaking mechanism of connection termination in TCP. 3M

3A. Host A sends a UDP datagram containing 8880 bytes of user data to host B over an Ethernet LAN. Ethernet frames may carry data up to 1500 bytes (i.e. MTU = 1500 bytes). Size of UDP header is 8 bytes and size of IP header is 20 bytes.There is no option field in IP header, how many total number of IP fragments will be transmitted and what will be the contents of offset field in the last fragment? 3M

3B. List the three phases in the virtual circuit approach to switching with example diagram. 4M

3C. Explain token passing access method in various logical ring topologies with neat diagrams. 3M

4A. Explain the Pure ALOHA protocol with a neat flow diagram for channel selection. 4M

4B. With a neat diagram explain the encoding and decoding process of a CRC. 4M

4C. What are the minimum and maximum values for payload and frame length in the ethernet frame ? 2M

5A. Why IPv4 address is not suitable for mobile hosts ? Explain the method to address the mobility in IPv4 with a neat diagram. 5M

5B. Explain the attenuation and amplification process with a neat diagram. What is the attenuation if a signal travels through a transmission medium and its power is reduced to 30 percent ? 3M

5C. Find the signal levels for a noiseless channel to achieve a data rate of 300Mbps with a bandwidth of 25MHz. 2M