21052414

Semester: 5th
Subject Name:- CN & Code:- IT-3009
Branch (s): - CSE, IT, CSSE, CSCE

AUTUMN RE-MID SEMESTER EXAMINATION-2023

School of Computer Engineering
Kalinga Institute of Industrial Technology, Deemed to be University
Computer Network
[IT-3009]

Time: 1 1/2 Hours **Full Mark: 40**

Answer All the Questions.

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. Answer all the questions. [2 x 5]

a) If WAN link is 2 mbps and RTT between source and destination is 300 msec, what would be the optimal TCP window size needed to fully utilize the line?

b) On a TCP connection, current congestion window size is 4 KB, The window advertise by the receiver is 6 KB. The last byte sent by the sender is 10240 and the last byte acknowledged by the receiver is 8192. The current window size at the sender is .....

c) Define the different addresses and Packet names used in various layer of TCP/IP Suite.

d) Consider a Stop-and-Wait communication system with a line bandwidth of 1 Mbps. The round trip time for a signal is 20 milliseconds. Calculate the bandwidth-delay product for this system. If the data packets to be transmitted are 1,000 bits each, determine the link utilization percentage.

e) What DNS cache issues are involved in changing the IP address of a web server host name?

2. [5+5 Marks]

A) Discuss the need for name resolution and the process of it with example. Illustrate the domain name hierarchy and the steps in resolution. Explain recursive and iterative resolution.

B) Host A wants to send a large file to host B. The path from host A to host B has two links, of rates R1=3 Mbps and R2=400 kbps. Assuming no other traffic in the network, find out the throughput for the file transfer. If R1 become half, then what is the throughput?

3. [5+5 Marks]

A) Illustrate and explain the TCP State transition diagram. Write down the significance of TIME_WAIT state and 2MSL timeout.

B) The ssthresh value for a Reno TCP station is set to 8 MSS. The station is now in the slow-start state with cwnd = 5 MSS and ssthresh = 8 MSS. Show the values of cwnd, sstresh, and the current and the next state of the station after the following events: three consecutive non-duplicate ACKs arrived, followed by five duplicate ACKs, followed by two non-duplicate ACKs, and followed by a time-out.

4. [5+5 Marks]

A) In SMTP, a sender sends un-formatted text. Write and explain the MIME header for his message.

B) Consider sending a packet from a source host to a destination host over a fixed route. List and explain the delay components in the end-to-end delay. Which of this delays are constant and which are variable?

*** Best of Luck ***