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COMPUTER NETWORKS/IT-3001/CSE & IT/ 5th Sem/2015

MID SEMESTER EXAMINATION

School of Computer Engineering

KIIT University, Bhubaneswar -24

Time : 2 Hours **Full Marks: 25**

(Answer any five questions including question No. 1 which is compulsory)

Q.1 [1*5]

a) Assume propagation delay is less than transmission delay on a link connecting host A to B. If host A starts transmission at t=0, at time equal to transmission delay, where is the first bit of the packet?

b) A base HTML page with 2 objects embed within have to be retrieved from the same server. Assuming HTTP operates over non-persistent connections, how many TCP connections will be opened for retrieving the same?

c) Why is it said that FTP sends control information "out-of-band"?

d) Suppose a user wants to acess a webpage using a given URL. The IP address of the HTTP server is initially unknown. What transport and application-layer protocols besides HTTP are needed in this scenario?

e) Suppose you want to do a transaction from a remote client to a server as fast as possible. What transport layer protocol will you use and Why?

Q.2 [3+2]

a) A channel has a bit rate of 4 Kbps and a propagation delay of 20 msec. For what frame size does the stop-and-wait protocol gives a channel utilization of at least 50%.

b) Explain, why SMTP can not be used at the receiver end for receiving the E-mail.

Q.3 [3+2]

a) Using m-bit sequence numbers, what is the maximum size of the send and receive windows for Selective Repeat ARQ ? In case, send-window size > 2^{m-1} what will be the problem, discuss with example.

b) A Sender has a sliding window of size 15. The first 15 frames are sent, The first ACK received is ACK 15. What frame(s) has the receiver accepted and What frame the receiver is expecting?

Q.4 [3+2]

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

b) What should be the maximum size of a file such that the TCP sequence number doesn't wrap around before the file transfer finishes? Assume a segment size of 536 bytes.

Q.5 [3+2]

a) Suppose two hosts A and B are connected by a 1 Mbps link of length 10 km. Suppose the speed of light over the link is 2 * 10^8 m/s. If a 5 MB file were to be transferred between the hosts as back-to-back packets, how many bits will be in the link at any given time?

b) Explain the relationship among message, segment, datagram, and a frame. Also name the layers at which they are generated.

Q.6 Write short notes on the followings [1*5]

a) circuit-switched vs packet-switched network

b) Flow Control vs Error Control

c) Recursive vs Iterative DNS query

d) Client-server vs Peer-to-Peer Architecture

e) Persistent vs Non-Persistent Connections