

CSE
Library



12

5th Sem

5th Semester
School of Computer Engineering
(B.Tech CSE, IT, SE & CE), Autumn 2019

AUTUMN MID SEMESTER EXAMINATION -2019

Computer Networks

[IT 3001]

Full Mark: 20

Duration: $1\frac{1}{2}$ hours.

Answer any FOUR questions including Question No.1, which is compulsory.

The Figure in the margin indicates full marks.

Candidates are required to give their answers in their own words as far as practicable.

All parts of the question should be answered at one place only.

1. [1 x 5 = 5]
- (a) Write four types of Records maintained by DNS. Write only one line about each.
- (b) What is HTTP Cache? How it helpful in addressing the stateless issue of HTTP?
- (c) What is In-band and out-of-band communication in FTP? Write the Well-known ports used in FTP.
- (d) In Go-back-N protocol with $m=6$, the sending machine is in the ready state with $S_f=10$ and $S_n=15$, An ACK with ACKNo. =13 arrives, what are the next values of S_f , S_n and R_n ?
- (e) If the value of HLEN field in TCP is 1101, how many bytes of options are included in the segment? If this value is used in total length field in UDP how much data in bytes the segment carries.
- 2.(a) In a packet switched network, TTL= 128 (Sender) and TTL= 125 (receiver). Time to Live (TTL): Each time a packet jumps a router the TTL value is decremented by '1'. Average Queuing delay in each intermediate router is 20 milliseconds and average processing delay in each intermediate router is 10 milliseconds. Link data-rate is 100Mbps. Packet size 64 kilo-bytes. Consider Speed of electrical signal in a guided media is $\frac{2}{3}$ of Speed of light and each intermediate node is separated by a distance of 100 kilo-meters from its adjacent node. [2 $\frac{1}{2}$]
Draw the flow diagram and calculate the following:
- i) How many intermediate routers are present?
- ii) Total time taken by the packet to reach the receiver. (in milliseconds)
- (b) What is HTTP persistent and nonpersistent connections. Briefly describes the different methods used in HTTP request message with examples. [2 $\frac{1}{2}$]
- 3.(a) Briefly explain the working of an E-mail Application with the help of neat block diagram showing functional blocks like UA, MTA, MAA, Mail-Box, Message-Queue. [2 $\frac{1}{2}$]
- (b) Statement: "P2P architecture is better compared to Client-Server architecture when it comes to sharing larger files." [2 $\frac{1}{2}$]
Justify the above statement quantitatively using mathematical model for Distribution time of P2P vs. client-server architecture and Show using a graph with increase number of hosts (Nodes) how Distribution time varies for both the architectures.
- 4.(a) A client is using a UDP socket **153.18.8.105:1087** to connect to a Daytime Server having socket **171.2.14.10:13**. The UDP payload is "TESTING". [2 $\frac{1}{2}$]
Given data: ASCII Values in Decimal: E = 69; G = 71; I = 73; N = 78; S = 83; T = 84.
Calculate the UDP Checksum for the Segment with above mentioned details.
- (b) Draw the TCP Segment format and briefly write each and every field (with Size). [2 $\frac{1}{2}$]
Mention all Six Control fields and its significance in TCP handshaking process. If the Sequence Number is 5000 and Urgent Pointer value is '200' then how TCP deals with it.



- 5.(a) List out *five key difference* between TCP and UDP. Following are the information for a TCP Client and a Server: $\left[2\frac{1}{2}\right]$
- The MSS (Maximum Segment Size) in both directions is 1000 bytes.
 - The ISN (Initial Sequence Number) for Client is 50 and for Server is 81.
- The Client sends 2000 bytes to the Server and the Server sends 3000 bytes to the client. Give the complete TCP message exchange between client and server. For each segment draw a vector showing the value of the SYN, ACK and FIN bits, with the value of the SEQ (Sequence Number) and the ACK (Acknowledgment Number). Assume no packets are lost and the application consumes the data as soon as it is received.
- (b) In a Noisy Channel, Selective Repeat ARQ protocol is implemented with $m=3$ (Number of bits for Sequence Number). Given that, **packet 0** is sent with successful acknowledged. **Packet 1** gets lost due to noise. **Packet 2 & packet 3** are successfully sent. However, only packet 2 is successfully acknowledged, whereas packet 3's acknowledgement is lost due to noise. With suitable flow diagram show the process of flow & Error control using sliding window with S_f , S_n , R_n , timer and ACK. $\left[2\frac{1}{2}\right]$
- 6.(a) Briefly state what do you mean by Half-close and full-close. Draw the state transaction diagram for TCP with half-close connection termination. $\left[2\frac{1}{2}\right]$
- (b) Write the features and responsibilities for each of the Seven layers of **OSI** from a top-down approach. $\left[2\frac{1}{2}\right]$

*** ALL THE BEST ***