DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER V [INFORMATION TECHNOLOGY]
SUBJECT: (IT 505) COMPUTER AND COMMUNICATION NETWORK

Examination	**: Third Sessional**	**Seat No.**	**: _____**
Date	**: 07/10/2015**	**Day**	**: Wednesday**
Time	**: 12 :00 to 1:15**	**Max. Marks**	**: 36**

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Do as directed.(No Marks Without Justification)

(a) Consider a TCP connection in a state where there are no outstanding ACKs. The sender sends two segments back to back. The sequence numbers of the first and second segments are 230 and 290 respectively. The first segment was lost, but the second segment was received correctly by the receiver. Let X be the amount of data carried in the first segment (in bytes), and Y be the ACK number sent by the receiver. The value of X and Y(in that order) are **[2]**
(A) 60 and 290 (B)230 and 291 (C)60 and 231 (d) 60 and 230

(b) What is the maximum size of data that the application layer can pass on to the TCP layer below? **[2]**
(A) Any size (B) 65515 bytes (C) 65495 bytes (D) 65507 bytes

(c) Which of the following transport layer protocols is used to support electronic mail **[2]**
(A)SMTP(B)IP (C)TCP (D)UDP

(d) Packets of the same session may be routed through different paths in: **[2]**
(A) TCP, but not UDP (B) TCP and UDP(C) UDP, but not TCP(D) Neither TCP nor UDP

(e) A program on machine X attempts to open a UDP connection to port 5376 on a machine Y, and a TCP connection to port 8632 on machine Z. However, there are no application listening at the corresponding ports on Y and Z. An ICMP port unreachable error will be generated by **[2]**
(A) Y but not Z (B) Z but not Y (C) neither Y nor Z (D) both Y and Z

(f) Consider different activities related to email **[2]**
m1: Send an email from a mail client to a mail server
m2: Download an email from mailbox server to a mail client
m3: Checking email in a web browser
(A) m1: HTTP m2:SMTP m3:POP (B) m1: SMTP m2:FTP m3:HTTP
(C) m1:SMTP m2:POP m3:HTTP (D) m1:POP m2:SMTP m3:IMAP

Q.2 Attempt ***Any Two*** from the following questions. **[12]**

(a) Give the differences between TCP and UDP. **[6]**

(b) Explain the following protocols in detail (I)DNS (II)FTP **[3+3]**

(c) **(I)**Suppose that the TCP congestion window is set to 18 KB and a timeout occurs. How big will the window be if the next four transmission bursts are all successful? Assume that the maximum segment size is 1 KB. **[3]**
(II) Define the following terms (a)Confidentiality(b)Authentication(c)Encryption **[3]**

Q.3 (a) **(I)**Explain three protocol scenarios for establishing a connection using a three-way handshake. **[3]**
(II) Write down the sequence of system calls for client and server for establishing and releasing a connection on transport layer and also describe the purpose of each system call. **[3]**

(b) Consider an instance of TCP's where the window size at the start of the slow start phase is 2 MSS and the threshold at the start of the first transmission is 8MSS.Assume that a timeout occurs during the fifth transmission. Find the congestion window size at the end of the tenth transmission. **[6]**

OR

Q.3 (a) The following is a dump of a TCP segment header in hexadecimal format. **[6]**
05320017000000010000000500207FF00000000

(1) What is the source port number?(2) What is the destination port number?(3) What is the sequence number?(4) What is the type of segment?(5) What is the length of header?(6)What is the window size?

(b) **(I)** On a TCP connection, current congestion window size is Congestion Window = 4 KB. The window size advertised by the receiver is Advertise Window = 6 KB. The last byte sent by the sender is LastByteSent = 10240 and the last byte acknowledged by the receiver is LastByteAcked = 8192. What is the current sender window size? **[3]**

(II) What is silly window syndrome? Write down solution of it. **[3]**