B.Tech. Degree VII Semester Examination, November 2008

IT/CS/EC 701 COMPUTER NETWORKS
(2002 Scheme)

Time: 3 Hours   Maximum Marks: 100

I   List the 7 layers of ISO-OSI network architecture and explain the functions of each layer. Supplement your answer with a neat diagram. (20)

OR

II   a)   Explain any five network topology. Also mention the advantages and disadvantages of each in terms of scalability. (10)

    b)   Suppose you are asked to design the data link layer of a network in a large company that uses ATM technology. How would your packet switching technology work? (10)

III   a)   Explain the services provided by the link layer. (10)

     b)   Explain the working of CSMA/CD (10)

OR

IV   a)   What is ARP? Explain its function. (10)

     b)   Explain how CRC is used as an error detection mechanism. Consider the 4-bit generator, G=1001 and suppose that D has the value 10101010. What is the value of R? (10)

V   a)   Compare datagram and virtual-circuit networks. (5)

    b)   What is the need of Border Gateway Protocol ,BGP when we have other protocols like RIP and OSPF? (5)

    c)   Explain Link State (LS) Routing Algorithm. Consider the following network. With the indicated link costs, use LS algorithm to compute the least cost path from A to all network nodes. Your answer must have a table indicating the various stages of calculation. (6 + 4=10)
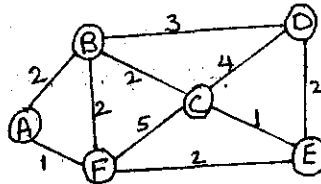
OR

VI   a)   How the IP addresses has been classified? Explain. (10)

     b)   Is it possible for a host to be assigned more than one IP address? How can IP address be assigned dynamically to a host? (Mention the protocol used and also its working) (10)

VII   a)   Explain the connection establishment and release in TCP. (10)

     b)   Bob is watching a cricket match played between India and Australia live in the Internet. What is the protocol used in the Transport Layer which makes this possible? Justify your answer. Also give the segment structure. (10)

OR

VIII   a)   Briefly discuss about TCP congestion control methods. (10)

      b)   What is the need for sequencing the packets? Consider a case where sender's window size is 4, sequence number is 3 bits. Show the working of GBN protocol in the following situations:

          i)   data packet is lost

          ii)   ACK is lost

          iii)   ACK is delayed

          iv)   No loss (10)

IX. (a)   What is Public Key Cryptography? Explain.   (10)

     (b)   Alice sends an e-mail to Bob which is later read by Bob. What are the protocols involved? Describe the journey of the e-mail message starting from Alice's PC and terminating at Bob's PC.   (10)

OR

X. (a)   Fill the table.   (2)

Layer	Address used in this layer
(i) Application	?
(ii) Transport	?
(iii) Network	?
(iv) Data Link	?

     (b)

Application	Port No.	Transport layer protocol used
DNS		
HTTP		
FTP		
Telnet		

               (3)

     (c)   Write short notes on FTP.   (5)
     (d)   What is Digital Signature? Explain how it is implemented.   (10)

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