MCA 4th Semester-2021

Computer Network   Paper-1.4

Q1. (a) Write the difference between TCP and UP protocols   (4)

   (b) For the graph with (edge :weight) pairs: AB:4, BC:2, CD:3, AE:5,BE:1,BF:5, EF:7, DF:4.   Find the shortest path from vertex E to the remaining vertices of the graph using Dijkstra's shortest path algorithm.   (10)

                    OR

  (c) Discuss how you can avoid the count to infinity problem in Distance vector routing.   (4)

  (d) For graph of Q1(b), obtain the routing table executing Distance vector routing.   (10)

Q2.(a) Suppose a network standard uses class A network's net id as 3bytes and host id as 4 bytes. Find the number of class A ip addresses and their ranges, including the number of hosts in each Class A Network   (7)

  (b) An ISP needs to allocate three subnets: Subnet 1, Subnet 2, and Subnet 3 with its acquired IP block of 223.1.17.0/24. Subnet 1 is required to support 30 interfaces, Subnet 2 is to support at least 45 interfaces, and Subnet 3 is to support at least 95 interfaces. In addition, values of IP addresses have the relationship: Subnet 1 < Subnet 2 < Subnet 3. Provide three network addresses (of the form a.b.c.d/x) that satisfy these constraints.   (7)
                    OR
(c) Answer Q2(a) for class B network that uses 3bytes for net id and 4 bytes for host id   (7)
(d) Answer Q2(b) assuming subnet1 supports 35 interfaces, subnet2 supports 64 interfaces and subnet3 supports 97 interfaces.   (7)

Q3.(a Write different congestion control mechanisms.   (7)
 (b) A token bucket network has maximum transmission rate 50 MB/sec.Token arrival rate is 10MB/sec, bucket capacity is 1MB. Determine how long a burst of maximum speed last. If 2MB data arrives, then how much time it takes to send this data at maximum data rate.   (7)
                    OR
(c) What is TCP Slow start algorithm to control congestion in the Network?   (7)
(d) Answer Q3(b) taking token bucket maximum transmission rate 40MB/sec.   (7)

Q4.(a) Write TCP Server program to transfer a file from server to client on request of the client. (14)
                    OR
(b) Write UDP server program to transfer a file from server to client on request of the client.   (14)

Q5.(a) Discuss on persistent, non-persistent http, cookies and working of proxy server.   (14)
                    OR
   (b) For RSA cryptosystem taking p=5,q=11, and d=27, find 'e' and encrypt the message "mnt", where m=4, n=6 and t=18.   (14)