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BMS College of Engineering, Bangalore-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)

July / August 2017 Supplementary Semester Examinations

Course: Computer Networks — Duration: **3 hrs**
Course Code: 16CS5DCCON — Max Marks: **100**

Date: 28.07.2017

Instructions: **1.Answer any five full questions choosing one from each unit.**
2. Assume missing data (if any) suitably

UNIT 1

1	a)	Differentiate between Persistent and Non-persistent connetions and illustrate without Pipelining and with pipeling connections with an example.	10
	b)	Analyse the need for different mail access protocol with suitable examples	10

UNIT 2

2	a)	Assume that your friend wants to host domain name **domain.com,** Design the steps involved from registering domain name till accessing the domain name by specifying recursive or iterative queries.	10
	b)	Develop a client-server program by using TCP/IP sockets, to make client sending the file name and the server to send back the contents of the requested file if present.	10

UNIT 3

3	a)	Analyse the need for Initial sequence number in TCP connection management	04
	b)	Explain TCP Segment structure with a diagram by specifying usage of 6 reserved bits	08
	c)	Suppose Host A sends two TCP segments back to back to Host B over a TCP connection. The first segment has sequence number 90; the second has sequence number 110. a.How much data is in the first segment? b. Suppose that the first segment is lost but the second segment arrives at B. In the acknowledgment that Host B sends to Host A, what will be the acknowledgment number?	08

UNIT 4

4	a)	Describe the Router Architecture with a neat diagram	08
	b)	Illustrate with a scenario of the network that consists of Four Senders, Routers with Finite Buffers and Multihop Paths of the principle of congestion control.	07
	c)	Analyse the need for different congestion control approaches	05

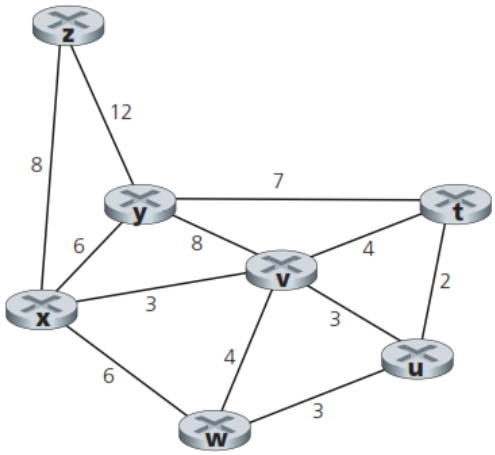
OR

5	a)	Describe the Three switching technique with a neat diagram with functionalities of each method	10
	b)	Suppose that the five measured SampleRTT values are 100 ms, 120 ms, 140 ms, 90 ms, and 115 ms. Compute the EstimatedRTT after each of these SampleRTT values is obtained, using a value of $\alpha = 0.125$ and assuming that the value of EstimatedRTT	10

was 100 ms just before the first of these five samples were obtained. Compute also the DevRTT after each sample is obtained, assuming a value of β= 0.25 and assuming the value of DevRTT was 5 ms just before the first of these five samples was obtained. Last, compute the TCP TimeoutInterval after each of these samples is obtained.

UNIT 5

6 a) Consider the following network, with the indicated link costs, use Dijkstra's shortest-path algorithm to compute the shortest path from *x* to all network nodes. Show how the algorithm works by computing a table 10

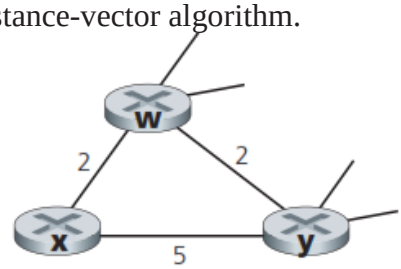


b) Consider the network fragment shown below. *x* has only two attached neighbors, *w* and *y*. *w* has a minimum-cost path to destination *u* (not shown) of 5, and *y* has a minimum-cost path to *u* of 6. The complete paths from *w* and *y* to *u* (and between *w* and *y*) are not shown. All link costs in the network have strictly positive integer values. 10

a. Give *x*'s distance vector for destinations *w*, *y*, and *u*.

b. Give a link-cost change for either *c*(*x*,*w*) or *c*(*x*,*y*) such that *x* will inform its neighbors of a new minimum-cost path to *u* as a result of executing the distance-vector algorithm.

c. Give a link-cost change for either *c*(*x*,*w*) or *c*(*x*,*y*) such that *x* will *not* inform its neighbors of a new minimum-cost path to *u* as a result of executing the distance-vector algorithm.



OR

7 a) Diffrentiate between IPV4 and IPV6 protocol and Illustrate the different transitioning techniques from IPV4 to IPV6. 10

b) Analyse the need for NAT and Illustrate an example of NAT transtion table for a network consisting of 3 nodes with a NAT router by specifying all the required details. 10

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