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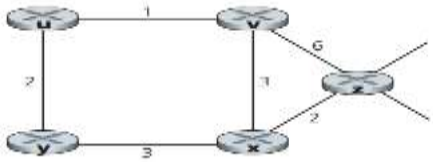
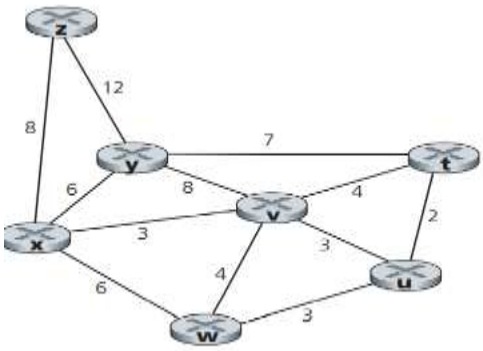
ACHARYA INSTITUTE OF TECHNOLOGY
BENGALURU 560107

INTERNAL ASSESMENT - II [Academic Year: 2020-21]

Sub with Code: COMPUTER NETWORKS (18CS52&17CS52) **Semester/Section: 5th A &B**
Max Marks : 50 **Time: 90 min**
Note: Answer all the questions

Note: Question No.1 is compulsory

1.	**a.**	Assume a TCP protocol experiencing the behavior of slow start. At 6th transmission round with a threshold (ssthresh) value of 64 goes into congestion avoidance phase and continues till 11th transmission. At 11th transmission round, 3 duplicate ACKs are received by the receiver and enter into additive increase mode. Timeout occurs at 17th transmission round. Illustrate with the graph, transmission round (time) vs congestion window size of TCP segments.	**5M**	**(CO4)**
	b.	Suppose that two measured RTT sample RTT values are 106ms and 120ms. Calculate i. Estimated RTT after each of these sample RTT value is obtained. Assume α=0.125 and estimated RTT is 100ms just before first of the sample obtained. ii. Calculate DevRTT ,assume β =0.25 and DevRTT was 5ms before first of these samples are obtained.	**5M**	
2	**a.**	Illustrate the need of Receive window field in TCP Segment structure, in the context of Congestion window.	**10M**	**(CO4)**
		(OR)		
3	**a.**	Analyze the connection management process by justifying the use of flags.	**10M**	
4	**a.**	 Consider the distance-vector algorithm and compute the distance table entries at each node.	**10M**	**CO3**
		(OR)		
5	**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. Apply the algorithm and the compute the table. 	**10M**	

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6	**a.**	A service provider has given you the Class C network range 209.50.1.0. Your company must break the network into as many subnets as possible as long as there are at least 50 clients per network. Calculate the number of subnets.	**5M**	**CO3**
	b.	Interpret why IPv6 is still not completely implemented in the internet, illustrate the solutions for the same.	**5M**	
		(OR)		
7	**a.**	Your company would like to break the Class B private IP address range 172.16.0.0 into as many subnets as possible, provided that they can get at least 300 clients per subnet. Compute the number of subnets.	**5M**	
	b.	Discover why each input port in a high-speed router stores a shadow copy of the forwarding table.	**5M**	
8	**a.**	Compare the IPv4 and the IPv6 header fields. Do they have any fields in common?	**5M**	**CO1**
	b.	Discuss how a hierarchical organization of the Internet has made it possible to scale to millions of users.	**5M**	
		(OR)		
9.		Explain the Broadcast routing algorithms in detail.	**10M**	

CO1: Illustrate the protocols in various TCP/IP layers like Application, transport and network.

CO 3: Apply the routing, flow control and congestion control techniques for a real time scenario

CO4: Compare connection oriented and connectionless services.

	Course-Coordinator	**Module-Coordinator**	**Test-Coordinator**	**HOD**
Signature				