Subject code: CS-421   **Subject Name: Computer Networks**   Dept. Code: **CS**
No. of pages: 02   Full Marks: 30   Duration: 2 *Hours*

All questions carry equal marks
All parts of a question should be answered at one place.

Q.No.	Particulars	Marks
1.(a)	Why the sliding window protocol provides superior performance in comparison to stop-n-wait? Justify with a suitable example. Quantify your answer with respect to the example.	
(b)	If a channel takes about .5 nano seconds to transmit one byte of data, then find its bandwidth?	
2.(a)	What is IEEE 802.4? Write the functioning of the protocol with neat steps. Mention proper comments to your explanation. Include all possible cases of its maintenance as well.	
(b)	If a user waits for 200msec to transfer a file of size 2MB in a network whose RTT is 100msec, find the network capacity?	
3.(a)	What do you mean by contention in wireless networks? Explain with a neat example about a contention based MAC protocol for wireless network.	
(b)	What do you mean by collision free protocol? Explain one such protocol for a wired network? Is the protocol an actual collision free? Justify your own answer.	
4.	Calculate the total time required to transfer a 1.5MB file for the following cases. Assume RTT = 80msec, packet size is 1KBand an initial 2 X RTT of handshaking before the data is actually sent:	
(a)	The band width is 10Mbps, and data packet can be sent continuously.	
(b)	The band width is 10Mbps, but after we finish sending each data packet we must wait one RTT before sending the next packet?	

5.	Below is given a network topology with the vertices representing the nodes and the edges representing the links of the nodes. The numerals associated with an edge represents the cost of reaching the next node. Considering the node E as the reference node who learnt about the new cost to its neighbors A,C and I as 8, 12, and 15 at any instant, update the routing tables for A, E, I, and C by the principle of Bellman-Ford algorithm.	