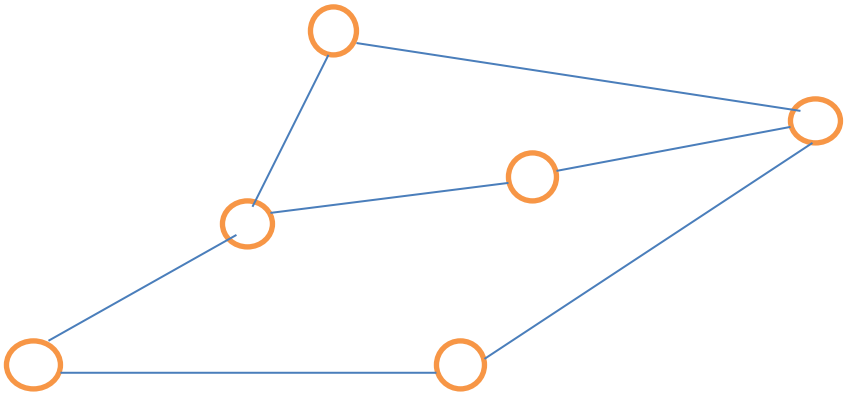
NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA
MID - TERM EXAMINATION, Autumn-2015
B.Tech. 7th Semester

Subject code: CS-421 **Subject Name: Computer Networks** Dept. Code: **CS**
No. of pages: 01 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)	Write an algorithm for the stop-n-wait protocol?	
(b)	Consider a link of 1.5 Mbps. If the RTT of the frame in a stop-n-wait protocol is 45ms and the sender can send only 01 frame per RTT, then find the %age of link utilization in the network. Assume the size of the frame to be 1KB.	
2.(a)	Write down the pseudo code for the logical ring maintenance of IEEE 802.3 for the following cases: • Lost token • Failure of logical Neighbor • Failure of consecutive logical Neighbor • Multiple nodes ready to join the ring • Failure of the token holder	
(b)	The bandwidth of a link is 1.5Mbps. The RTT is 100msec. If a packet size is 1-KB data and an initial 2X RTT of handshaking is sent before the data and then the packets are sent continuously, then calculate the total time required to transfer a 1000 KB file in a network?	
3.(a)	What is framing? How do the frame boundaries help in protecting data? Discuss an efficient framing technique.	
(b)	With a suitable example, justify that selective repeat ARQ provides better channel utilization than that of Go Back n ARQ?	
4. (a)	Suppose you are designing a sliding window protocol for a 1-Mbps point-to-point link to the moon, which has a one way latency of 1.25 sec. Assuming that each frame carries 1KB of data, what is the minimum number of bits you need for the sequence number?	
(b)	Mention the functioning of the sliding window protocol? Write an algorithm for the same.	

5.	 Mention the shortest path routing algorithm to find the path between stations C to F and the cost in the above figure. Indicate each of the working nodes selected in sequence.	