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THE LNM Institute of Information Technology

III Year, II Semester, 2015
Exam: Mid Term

COMPUTER NETWORKS

(Duration: *1.5* hour)

NOTE: Answer ALL questions. Do not write on question paper except Name and Roll number.

1. **[Marks 9]** Stations A and B exchange frames using sliding window flow control. The acknowledgments are piggybacked on the data frames. Each station has five frames to transmit. The window size 3 and modulo 4 counting is used. Fill x by the appropriate sequence number in the control field of the frame shown below. Also show the status of the window in each step for both stations. Assume that there are no errors.

	Station A		Station B
(a)	0 0	$\longrightarrow$	
(b)	x x	$\longrightarrow$	
(c)		$\longleftarrow$	0 x
(d)		$\longleftarrow$	x x
(e)	x x	$\longrightarrow$	
(f)	x x	$\longrightarrow$	
(g)		$\longleftarrow$	x x
(h)		$\longleftarrow$	x x
(i)		$\longleftarrow$	x x
(j)	x x	$\longrightarrow$	
(k)		$\longleftarrow$	RR x

Note: RR- Repeat Request.

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2. [Marks 2 + 2 + 2 + 3]

(a) A device is sending a file of 1,00,000 characters at the rate of 2000bps. How long device takes to send?

(b) If the receiver receives following sequence, which is encoded by Hamming code (odd parity). Find the actual bit sequence sent by the sender.
100010011100

(c) Draw the graph of the 2B1Q scheme for the following bit stream.
00110011010100

(d) Octets of an Ethernet frame in hexadecimal are given below. The preamble and start delimiter octets are not included. Identify the various fields. Is it an IEEE 802.3 frame or Ethernet(DIX) frame?

00 00 66 33 B5 49 00 00 A7 12 36 B7 00 60 AA AA 03 00 00 00 08 00 48 45 4C 4C

3. [Marks 6 x 2] Explain in brief.

(a) List out the differences between OSI reference model and TCP/IP protocol stack.

(b) In Internet environment, which of the following applications are sensitivity to delay?
  (i) surfing the Internet
  (ii) copying a file
  (iii) sending an e-mail

(c) If the physical destination address is corrupted during the transmission in bus topology. What happens to the frame? How can the sender be informed about the situation?

(d) What service does the Network layer in the OSI reference model expect from the layer below? And what service does it provide to the layer above?

(e) Is it possible that a router implements several types of data link layers?

(f) Which of the four type of delay (transmission, propagation, processing, queuing) depends on the packet size?