INSTRUCTIONS:

1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1	**Do as directed.**	**[12]**
A	Put the encapsulation steps in order: 1:User Input, 2:Frame, 3:Segment, 4:Packet, 5:bits	**[1]**
B	End-to-End connectivity is provided from host-to-host in	**[1]**
	(A) Network Layer (B) Data link Layer (C) Transport Layer (D) Physical Layer	
C	How many bits burst error can be detected using CRC method?	**[1]**
D	What is time domain reflectometry?	**[1]**
E	What addressing information is shipped with every network interface card?	**[1]**
	(A) IP Address (B) MAC Address(C) ARP Address (D)All of these	
F	What are the responsibilities of presentation layer in OSI model?	**[1]**
G	Stop and wait protocol equal to	**[1]**
	(A) SR protocol with SWS = 1 (B) GBN protocol with RWS = 1(C) SR protocol with SWS = RWS (D)GBN protocol with SWS = RWS	
H	Define: (1) peer entity (2) interface.	**[1]**
I	if we run N simultaneous stop-n-wait ARQ processors parallely over the transmission channel, then it is equal to	**[1]**
	(A) Go-back N protocol (B) SR Protocol(C) Stop-n-wait protocol(D) None of these	
J	Which of the following devices translates dissimilar network protocols?	**[1]**
	(A) Router (B) Repeater(C) Switch (D) Gateway	
K	What would happen if two machines on the same LAN have the same MAC address?	**[2]**
Q.2	Attempt **Any TWO** of the following questions.	**[12]**
a	**[I]**Station A needs to send a message consisting of 9 packets to Station B using a sliding window (window size 3) and go-back-n error control strategy. All packets are ready and immediately available for transmission. If every 5th packet that A transmits gets lost (but no acks from B ever get lost), then what is the number of packets that A will transmit for sending the message to B?	**[4]**
	[II]Define: Hidden station and Exposed station problem.	**[2]**
b	**[I]**Assume that source S and destination D are connected through two intermediate routers labeled R. Determine how many times each packet has to visit the network layer and the data link layer during a transmission from S to D.	**[3]**

	[II]Define: Contention period, Transmission period and Idle period with respect to CSMA/CD	**[3]**
c	What is the remainder obtained by dividing x^7+x^5+1 by the generator polynomial x^3+1?Show the transmitted bit string.suppose 4th bit from the left is inverted during the transmission show this error is detected at the receiver end.	**[6]**
Q.3(a)	**[I]**Explain Binary countdown protocol with example.	**[3]**
	[II]Answer the following questions for frame arrives at bridge in LAN	**[3]**
	(1)What if destination and source LAN are same? (2) What if destination and source LAN are different? (3) What if destination LAN is unknown?	
Q.3(b)	Two neighboring nodes (A and B) use the selective-repeat ARQ with a 3-bit sequence and a window size of 4 at the transmitter and receiver. Assuming A is transmitting and B is receiving, show the content of the window and the positions of the respective pointers at both nodes A and B for the following succession of events.	**[6]**
	(a) Before A sends any frames.	
	(b) After A sends frames 0, 1, and 2; B acknowledges 0 and 1, and both ACK's are received by A.	
	(c) After A sends frames 3, 4, and 5; B acknowledges 4, and the ACK is received by A.	

-OR-

Q.3(a)	Explain IEEE-802.5 LAN standard in detail.	**[6]**
Q.3(b)	Sixteen bit messages are transmitted using a hamming code. How many check bits are needed to ensure that receiver can detect and correct single bit error? Show the bit pattern transmitted for the message 1101001100110101. Assume that even parity is used in hamming code. Suppose the 7th bit position from right has been changed during the transmission. Show that this error is detected at the receiver's end. Take D1 from left.	**[6]**