NAME: ID: SIGNATURE:	Q1 (1)	Q2 (1)	Q3 (1)	Q4 (1)	Q5 (1)	TOTAL (5)

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BLG 337E - PRINCIPLES OF COMPUTER COMMUNICATIONS

Assoc. Prof. Dr. Berk CANBERK
T.A. Tuğçe BİLEN

QUIZ-3

Q1- (1 point)

You have just explained the ARP protocol to a friend. When you are all done, he says: ‘‘I’ve got it. ARP provides a service to the network layer, so it is part of the data link layer.’’ What do you say to him?

ANSWER: You say that ARP does not provide a service to the network layer, it is part of the network layer and helps provide a service to the transport layer. The issue of IP addressing does not occur in the data link layer.

Q2- (1 point)

A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is $x^3 + 1$. Show the actual bit string transmitted.

ANSWER: The frame is 10011101. The generator is 1001. The message after appending three zeros is 10011101000. The remainder on dividing 10011101000 by 1001 is 100. So, the actual bit string transmitted is 10011101100.

Q3- (1 point)

Why is the minimum ethernet frame 64 bytes?

ANSWER: A node can start a frame transmission when the network is idle. But different nodes can start transmission at the same time and this causes collision. The nodes should detect the collision before they are finishing the frame transmission, then they can insert a jamming signal to abort the transmission. For this reason, the ethernet requires minimum frame size.

Q4- (1 point)

How long does a station, *s*, have to wait in the worst case before it can start transmitting its frame over a LAN that uses the basic bit-map protocol?

ANSWER: The worst case is where all stations want to send and *s* is the lowest-numbered station. Wait time N bit contention period + $(N - 1) \times d$ bit for transmission of frames. The total is $N + (N - 1)d$ bit times.

Q5- (1 point)

Consider the delay of pure ALOHA versus slotted ALOHA at low load. Which one is less? Explain your answer.

ANSWER With pure ALOHA, transmission can start instantly. At low load, no collisions are expected so the transmission is likely to be successful. With slotted ALOHA, it has to wait for the next slot. This introduces half a slot time of delay.

DURATION: 30min