**資工三 109590004 呂育瑋 計算機網路 Homework 6**

1. If all the links in the Internet were to provide reliable delivery service, would the TCP reliable delivery service be redundant? Why or why not?

A: 雖然每個link都能夠確認單筆資料是否遺失、正常被接收，但卻無

法確保多筆資料傳輸順序正確，TCP能夠偵測並處理不正確順序的

資料傳輸，因此TCP的服務並非是多餘的。

1. Why is an ARP query sent within a broadcast frame? Why is an ARP

response sent within a frame with a specific destination MAC address?

A:

1. In CSMA/CD, after the fifth collision, what is the probability that a node

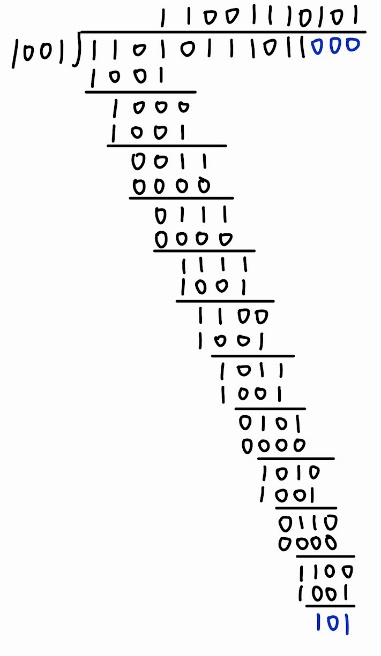
chooses *K* = 4? The result *K* = 4 corresponds to a delay of how many seconds on a 10 Mbps Ethernet?

4. Consider the CRC code. If the generator, G=1001, and suppose that D has

the value of 11010111011. What is the value of R=? What is the actual bit

pattern sent by the transmitter.?

A: R = 101, sent bits = 11001110101



1. In the textbook, we provided an outline of the derivation of the efficiency

of slotted ALOHA. In this problem we’ll complete the derivation.

a. Recall that when there are *N* active nodes, the efficiency of slotted ALOHA is *Np*(1 -*p*)*N*-1. Find the value of *p* that maximizes this expression.

b. Using the value of *p* found in (a), find the efficiency of slotted ALOHA by letting *N* approach infinity. *Hint*: (1 — 1/*N* )*N* approaches l/*e* as *N* approaches infinity.