
King Fahd University of Petroleum and Minerals
Computer Engineering Department

COE 560: Computer Networks
Spring 2002 (012)

Midterm Exam

Date: April 18, 2002

Time: Take home (24 hrs).

Section: 1

Instructor: Dr. Abdulaziz Almulhem

Student ID#:

Student Name:

| Question | Points |
|-----------------|---------------|
| 1. | /10 |
| 2. | /10 |
| Total | /20 |

Notes:

1. This is a take home examination.
2. Solve all the questions.
3. Show all your work.
4. Without proper justification and details of steps, correct answers alone may not carry full credit.

Q.1 CRC

CRC is used to check erroneous bits in a message. It can detect different types of errors (i.e. single, double, even, etc.). Prove that this scheme can detect odd number of errors if the generator function contains the factor $(x+1)$.

Q.2 ARQ

An ARQ protocol is to be implemented as follows. Sender has a window (W) of packets to be sent out. Receiver has to *periodically* acknowledge receipt of packets. That is the receiver will not acknowledge each packet it has received instead it will send an acknowledgement every s seconds to acknowledge the last packet received in order. Lost packet has to be retransmitted along with subsequent packets. Formulate the throughput of this ARQ scheme. Compare it to the performance of Go Back N (GBN) and Selective Repeat Protocol (SRP). Devise alteration to improve the performance of this scheme.

End of Exam