CARLETON UNIVERSITY
Department of Systems and Computer Engineering

94.565 | **Advanced Digital Communications** | **Winter 1999**

Supplementary Problems

Given: Monday, April 12, 1999

Part I. All questions in this part are from the text (*Digital Communications*, J. Proakis, 3rd ed., 1995):

Questions 13.6, 13.7, 13.9, 13.10, 14.3, 14.12.

Part II.

1. A pseudo-noise (PN) sequence is generated using a feedback shift register of length m=5. The chip rate is 10^7 chips per second. Find the following parameters.
   (a) PN sequence length.
   (b) Chip duration of the PN sequence.
   (c) PN sequence period.

2. A four-stage feedback shift register is used to generate a pseudo-noise sequence. The only feedback connection is after the 3rd flip-flop. The initial state of the register is 1100. Find the output sequence of the shift register. Is this a "maximum-length" sequence?