<u>Directions</u>. Work this test without the aid of any other person, and provide no aid to any other person. You may refer to your notes, textbook, or any other books you care to consult. Of course you may use a calculator or computer. Attach this cover sheet to your solutions and submit your completed exam no later than 11:00 am on Thursday, May 15. Be sure to cite and credit any references you use.

Work these problems in the spirit of the modeling approach used in your text. Pay particular attention to identifying any variables you introduce and clearly communicating your assumptions, thoughts, and problem solving processes, and to justifying your procedures and conclusions or conjectures. Whenever possible, justify your answers by using mathematical concepts and traditional methods rather than "guess & test" procedures using a computer or calculator. This is an opportunity to show off what you know and have learned and how you can apply that knowledge.

Sign one of the two statements.

Statement: I worked this test in compliance with the above directions.

_____ (Signature)

Statement: I am unable to sign the statement above due to the exception(s) listed below.

_____ (Signature)

Do items #4 and #5 and only three or the remaining five items. That is you may omit one of the items #1, #2, #3, #6.

1. Exercises 3.3: #8

2. Exercises 3.4: #5

3. Exercises 3.4: #10

4. Exercises 5.3: #13 (Formulate and solve the LP problem.)

5. Formulate the "The Cereal Box Problem" involving the collecting of trinkets as a MCP and use the theory associated with MCP's to derive the total number of boxes opened prior to gaining a complete collection of trinkets. This situation was discussed in class sessions #1 and #2. When opening any box, we assumed that each type of trinket was equally likely to occur.

6. Consider the situation of Exercises 5.4: #9. Construct a network representation for the problem and then formulate the problem as an LP problem. Finally, solve and interpret the LP problem. (Look at your notes for class session #21on 04/14.)