1. (4 points) Please refer to the Waffle House Case Study and answer the following questions (Problem 4.4):

Based on your analysis in Problem 3 of Homework 2 (Problem 4.3 of the Waffle House Case Study), answer the following questions:

a. (1 points) Suppose once again that your operations management team estimates from experience that the region is likely to be without electricity for three days following a storm and that lost profits are $5,000 per day. How many generators should be purchased to minimize the maximum regret?

b. (1 points) What is the impact of your decision about the number of generators to purchase if electricity is actually out for four days?

c. (2 points) What are the advantages and disadvantages of using a model that minimizes maximum regret in determining how many generators to procure?

2. (4 points) In the "Simulation Models for Humanitarian Relief" presentation:

a. (2 points) What are the advantages to use simulation in the analysis of Guinea worm disease in Sudan?

b. (2 points) Give an example on your life that can be improved by analyzing it using simulation. List possible simulation inputs and outputs of your example.

3. (6 points) Refer to “A minimal technology routing system for meals on wheels” by John J. Bartholdi, III, and answer the following questions:

a. (2 points) Question 2 Before the system was redesigned the MOW drivers reported seeing each other on the routes several times a day. Why does this indicate an inefficient set of routes?

b. (2 points) Question 5 The spacefilling curve heuristic seems to ignore travel time and distance but nevertheless produces relatively short routes; how is this possible?

c. (2 points) Question 6 Can the spacefilling curve heuristic be used to route a vehicle in a city that has a large lake or park through which traffic cannot pass? What problems might this cause the routing system? Explain.
4. (4 points) Refer to Zahra, S.A., et al., A typology of social entrepreneurs: Motives, search processes and ethical challenges, Journal of Business Venturing (2008), and answer the questions:
   a. (2 points) Which are the three types of social entrepreneurs that this paper addresses? What are the differences between them?
   b. (2 points) What are the ethical challenges that each type of social entrepreneur faces?

5. (2 points) Visit the website of your favorite non-governmental organization. What is their mission? What is their vision? (Refer to the 1-page handout distributed by Professor Terry Blum in class.)

6. (3 points) Refer to the “Modeling Pandemic Influenza” presentation.
   a. (1 point) On Slide 14, explain why the “percentage of infected population” curve has an increase-decrease type shape. (These are also called “diffusion” curves, and are seen in other settings as well. For example, in the marketing literature, similar curves are used to model the “diffusion” of new products into the market.)
   b. (2 points) On Slide 14, explain why the peak infectivity and infection attack rate (IAR) are lower, and the peak day is later, when $R_0=1.5$ compared to when $R_0=2.1$. (Recall that is $R_0$ the average number of people an infected individual is expected to infect.)

Note: If you want to submit your homework electronically, please send it to ytlee1@gatech.edu. If you want to submit a hardcopy, please bring it to class.