Question 1 (25pts)
For the following questions, refer to the related article.

1. What is a demand-driven supply chain? How is it different from a forecast-driven supply chain?
2. How did the new supply chain positioning help NMS to streamline its supply chain operations and solve its problems related to its forecast-driven structure?
3. In order to implement a build-to-order (BTO) strategy, which business practices needed to change as revealed by the quantitative analysis? Why?
4. What are the three major supply chain processes that NMS redesigned to move from a forecast–driven to a BTO system? How? Does moving to a BTO system make forecasting less important?
5. What are the manufacturing challenges in moving to a BTO system?

1. What is Enterprise Resource Planning (ERP)? How is it different from MRP?
2. Discuss the cons and pros of implementing an ERP system. What are the hidden costs of ERP?
3. Does ERP fit all business models? Why did the firms stated in the article suffer from implementation failures?

1. What are the benefits of vertical integration and virtual integration?
2. How is Dell, unlike others in the industry, able to tell its suppliers exactly what their daily production requirements are as opposed to telling them that they need 7000 components every two weeks?
3. How does Dell’s direct business model help to maintain close relationships with its customers?

Question 2 (15pts)
Answer questions 49 (5pts) and 50 (10pts) from Chapter 10 of the 4th Edition of Nahmias (see the scanned pages in attachment). Note: CRAFT is the same as the 2-OPT method we did in class. For question 50, use the centoid method and the Euclidian metric to find the distances between departments.
49. A facility has the shape shown in Figure 10–32. Using the methods described in Appendix 10–A, find the location of the centroid of this facility.

50. An initial layout for four departments and from-to charts giving distances separating departments and unit transportation costs appear in Figure 10–33. Using the CRAFT pairwise exchange technique, find the layout recommended by CRAFT to minimize total materials handling costs.

51. An initial layout for five departments and a from-to flow data chart are given in Figure 10–34. Assuming that departments A and D are in fixed locations and cannot be moved, find the layout recommended by CRAFT for departments B, C, and E. Assume that the objective is to minimize total distance traveled.

52. Consider the rel chart for the Meat Me fast-food restaurant, given in Figure 10–2. Assume that the areas required for each department are

<table>
<thead>
<tr>
<th>Department</th>
<th>Area Required (square feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking burgers</td>
<td>200</td>
</tr>
<tr>
<td>Cooking fries</td>
<td>200</td>
</tr>
<tr>
<td>Packing and storing</td>
<td>100</td>
</tr>
<tr>
<td>Drink dispensers</td>
<td>100</td>
</tr>
<tr>
<td>Counter servers</td>
<td>400</td>
</tr>
<tr>
<td>Drive-up server</td>
<td>100</td>
</tr>
</tbody>
</table>

Assume a sweep width of 2 squares and facility dimensions of 5 by 9 squares, where each square is 5 feet on a side. As a result, for example, the cooking-burgers department requires 8 squares. Use the ALDEP approach to
develop a layout for the restaurant. Comment on the practicality of your results.

53. Frank Green, an independent TV repairman, is considering purchasing a home in Ames, Iowa, that he will use as a base of operations for his repair business. Frank’s primary sources of business are 10 industrial accounts located throughout the Ames area. He has overlaid a grid on a map of the city and determined the