Question 1 (10 points)
A small furniture shop has exactly 20,000 square feet of space to display three items: Coffee table, End table, Dinner table. The relevant data for these items are given below:

<table>
<thead>
<tr>
<th>Item</th>
<th>Annual Demand</th>
<th>Cost per unit ($)</th>
<th>Space per unit (ft²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee Table</td>
<td>2000</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>End Table</td>
<td>1500</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>Dining Table</td>
<td>500</td>
<td>250</td>
<td>80</td>
</tr>
</tbody>
</table>

The setup cost for replenishment of each item is $300, and the annual interest rate is 20%. Find the optimal order quantities of each item (Try at least 3 different $\theta$ values).

Question 2 (30 points)
For the following questions, refer to the related article.

   1. What were the causes of Gillette’s paradoxical “poor service, high inventory” situation before implementing the new value chain concept?
   2. How is the process flow in Gillette’s value chain different than the flow in a traditional supply chain?
   3. How has Gillette improved their inventory-planning process?
   4. How has Gillette changed their top-down approach to demand planning?

   1. What is unique to the semiconductor industry in analyzing service supply chain management’s (SSCM) importance and complexity?
   2. What were the root causes of KLA-Tencor’s poor performance in parts availability and SSCM?
   3. How did KLA-Tencor slow the growth in excess inventory?
   4. What was the impact of part wait time on improving fill rates?
   5. How were the inventory cost-service tradeoff curves used in implementing a service planning strategy?

   1. What is a postponement strategy and why is it important? Discuss its benefits.
   2. Why do many firms prefer a traditional inventory management approach to postponement?
   3. What are the operational challenges in implementing a postponement strategy?
   4. Can postponement be implemented in all environments? Why?