Questions for Individual Assignment

Due: 18th April Midnight (one pdf file per person submitted in My Courses)
Please write your name and ID clearly on the cover page of the pdf file; you will need to use the excel files showed in the class

1. **(35 points)** An electronics company has two contract manufacturers in Asia. Foxconn assembles its tablets and smartphones while Flextronics assembles its laptops. Monthly demand for tablets and smartphones is 10,000 units while that for laptops is 4,000. Tablets cost the company $100 while laptops cost $400 and the company has a holding cost of 25 percent. Currently, the company has to place separate orders with Foxconn and Flextronics and receives separate shipments. The fixed cost of each shipment is $10,000.

   What is the optimal order size and order frequency with each of Foxconn and Flextronics separately? For what fixed cost per order would an order size of 5,000 units be optimal for Foxconn (i.e, tablets/smartphones)?

   The company is thinking of combining all assembly with the same contract manufacturer. This will allow for a single shipment of all products from Asia.

   If the fixed cost of each shipment remains $10,000, what is the optimal order frequency and order size from the combined orders? How much reduction in cycle inventory can the company expect as a result of combining orders and shipments?

2. **(20 points)** Answer the following questions in max 2 pages.

a) Why can a Home Depot with a few large stores provide a higher level of product availability with lower inventories than a hardware store chain such as Tru-Value, with many small stores?

b) In the 1980s, paint was sold by color and size in paint retail stores. Today paint is mixed at the paint store according to the color desired. Discuss what, if any, impact this change has on safety inventories in the supply chain.

c) Consider a firm such as Zara that has developed production capabilities with very short replenishment lead times. Do you think this capability is more valuable for its online operations or its store operations? Why?

3. **(30 points)** Green Thumb (GT), a manufacturer of lawn care equipment, has introduced a new product. Each unit costs $150 to manufacture and the introductory price is $200. At this price, the anticipated demand is normally distributed with a mean of 100 and standard deviation of 40. Any unsold units at the end of the season are unlikely to be valuable and will be disposed of in a post-season sale of $50 each. It costs $20 to hold a unit of inventory for the entire season.
   a. How many units should GT manufacture for sale?
   b. What is the expected profit?
   c. On average, how many units will be leftover at the end of the season and how many stockouts will be there?
   d. How will the result for part a change if it costs GT $50 to dispose of the leftovers at the end of the season (every other thing remains the same)?

4. **(15 points)** Answer the following questions in max 1 page
   a. Consider two products with the same cost but different margins. Which product should have a higher level of product availability? Why?
   b. Consider two products with the same margin carried by a retail store. Any leftover units of one product are worthless. Leftover units of the other product can be sold to outlet stores. Which product should have a higher level of availability? Why?
   c. A firm improves its forecast accuracy using better market intelligence. What impact will this have on supply chain inventories and profitability? Why?