Show all your work for credit. Total: 30 Points

1. The Southern Computer Company builds a computer designated model BX2. It imports the motherboard from Taiwan, but inserts the sockets for the chips and boards in its plant in Macon, Georgia. Each computer requires a total of 90 64K DRAM chips. Southern sells the computers with three add-in boards and two disk drives. The company purchases both the DRAM chips and the disk drives from an outside supplier. The product structure diagram for the BX2 computer is given below.

Suppose that the forecasted demands for the computer for weeks 6 to 11 are 210, 175, 170, 125, 70, 300. The starting inventory of assembled computers in week 6 will be 70, and the production manager anticipates returns of 40 in week 8 and 20 in week 11.

a. (1pt.) What’s the lead time required to manufacture one computer?
b. (3pts) Determine the MPS for the computers.
c. (3pts) Determine the planned order release for the motherboards assuming a lot-for-lot scheduling rule.
d. (3pts) Determine the schedule of outside orders for disk drives.

![Product Structure Diagram]

2. Suppose that the net requirements for Christmas lights are 50, 83, 27, and 55 for the four weeks in November. The leadtime to manufacture lights is 1 week. The setup cost is $120 and the inventory holding cost per week is $1. There is only one setup each week for production of these lamps, and there is no backordering of excess demand. The shop has enough capacity to product any number of lights in a week. Assuming no starting inventory, calculate the planned order releases using each of the methods below and calculate the total setup and inventory holding cost over the planning horizon that would be incurred with each method.

a. (1pts) Lot-for-lot scheduling
b. (3pts) EOQ-based lot sizing  
c. (3pts) The Silver-Meal Heuristic  
d. (3pts) The Least Unit Cost Heuristic  
e. (3pts) Part Period Balancing  
f. (7pts) Find the optimal solution using the shortest path method and compare the optimal cost with that incurred in the above methods.