

Mgmt 361 Homework 3 (16 points total)

**Question 1** (3 points)

Use a Chase Strategy to create a feasible plan for months May - Oct. Total production capacity = 5,000 units a month. There is a beginning inventory of 1000 units.

Hard Constraints:

- 1.) Cannot exceed capacity.
- 2.) Must have at least 100 in inventory at the end of September.
- 3.) No shortages are permitted.
- 4.) Must have exactly 50 units of inventory at the end of the planning horizon.

Consider the constraints one at a time in the order presented. Make one adjustment at a time.

Chase Strategy	April	May	June	July	Aug.	Sept.	Oct.
Demand	-	4000	4800	5600	5000	6400	2000
Basic Plan							
Inventory							
Adjustment 1							
Inventory							
Adjustment 2							
Inventory							
Adjustment 3							
Inventory							
Adjustment 4							
Inventory							

**Question 2** (3 points)

Use a Level Strategy to create a feasible plan for months May - Oct. Total production capacity = 3050 units a month. There is a beginning inventory of 600 units.

Hard Constraints:

- 1.) No shortages are permitted.
- 2.) Cannot exceed capacity.
- 3.) Must have at least 100 in inventory at the end of September.
- 4.) Must have no units in inventory at the end of the planning horizon.

Consider the constraints one at a time in the order presented order. Make one adjustment at a time.

Level Strategy	April	May	June	July	Aug.	Sept.	Oct.
Demand	-	3200	3200	3000	2900	3400	2300
Basic Plan							
Inventory							
Adjustment 1							
Inventory							
Adjustment 2							
Inventory							
Adjustment 3							
Inventory							
Adjustment 4							
Inventory							

**Question 3** (3 points)

*Having used a Level Strategy assume you have established a final plan and are now ready to determine how to schedule labor and determine costs. Use the information in the cost table below to assist you. There are no restrictions on inventory, backorder, subcontracting, etc.*

	<i>Capacity</i>	<i>Unit cost</i>
<i>Regular</i>	<i>40</i>	<i>\$80</i>
<i>Overtime</i>	<i>8</i>	<i>\$120</i>
<i>Sub-contract</i>	<i>no restrictions</i>	<i>\$140</i>
<i>Inventory</i>	<i>no restrictions</i>	<i>\$10</i>
<i>Backordering</i>	<i>no restrictions</i>	<i>\$20</i>

<b>Time period</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	
<b>Demand</b>	<b>50</b>	<b>44</b>	<b>55</b>	<b>60</b>	<b>50</b>	<b>40</b>	<b>51</b>	
<b>Final Plan</b>	<b>50</b>							
<b>Regular</b>								
<b>OT</b>								
<b>Sub-Contr.</b>								
<b>Inventory</b>								
<b>Regular</b>								
<b>OT</b>								
<b>Sub-Contr.</b>								
<b>Inventory</b>								
<b>Backorder</b>								
<b>Total cost</b>								

**Question 4** (3 points)

*Having used a Chase Strategy assume you have established a final plan and are now ready to determine how to BEST schedule labor to determine least costs. Use the information in the cost table below to assist you. There are no restrictions on inventory, backorder, subcontracting, etc.*

	<i>Capacity</i>	<i>Unit cost</i>
<i>Regular</i>	<i>40</i>	<i>\$80</i>
<i>Overtime</i>	<i>8</i>	<i>\$120</i>
<i>Sub-contract</i>	<i>no restrictions</i>	<i>\$140</i>
<i>Inventory</i>	<i>no restrictions</i>	<i>\$10</i>
<i>Backordering</i>	<i>no restrictions</i>	<i>\$20</i>

<b>Time period</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	
<b>Demand</b>	<b>50</b>	<b>44</b>	<b>55</b>	<b>60</b>	<b>50</b>	<b>40</b>	<b>51</b>	
<b>Final Plan</b>	<b>50</b>	<b>48</b>	<b>51</b>	<b>60</b>	<b>50</b>	<b>43</b>	<b>48</b>	
<b>Regular</b>								
<b>OT</b>								
<b>Sub-Contr.</b>								
<b>End Inventory</b>								
<b>Regular</b>								
<b>OT</b>								
<b>Sub-Contr.</b>								
<b>Inventory</b>								
<b>Backorder</b>								
<b>Total cost</b>								

**Question 5** (3 points)

Two products K and L were produced on a single machine. We need 16 minutes to produce 1 unit of K and 4 minutes to produce 1 unit of L. For every unit of K produced, we need to produce 3 units of L. The machine is available 8 hours per day, 20 days per month. It takes 1 hour to change the set up (from K to L or from L to K). You must produce both products every day. Suppose we start our production with product K on day 1 (because the machine is already set up for K).

a) \_ How should we schedule the machine to maximize monthly production?

b) How many units of K can we produce in 1 month? \_\_\_\_\_

c) How many units of L can we produce in 1 month? \_\_\_\_\_

**Question 6** (1 point)

Match the term on the left with its definition or complementary information on the right

1	An issue related to fixed-interval ordering		A	Identify the optimal order quantity by minimizing the sum of certain annual costs
2	Inventory turn		B	Risk of a stockout
3	Lead time		C	An order model when order size will tend to vary
4	Shortage cost		D	Ratio of average cost of goods sold to average inventory investment
5	EOQ models		E	Stock that is held in excess of expected demand
6	Fill Rate		F	Probability that demand will not exceed supply during lead time
7	Service level		G	Results when demand exceeds the supply of inventory on hand
8	Fixed -order-interval		H	The percentage of demand filled by the stock on hand
9	Inventory		I	A stock or store of goods
10	Safety stock		J	Time interval between ordering and receiving the order

1	2	3	4	5	6	7	8	9	10