

## Assessment 4 Aggregate Planning

### Question1

IT gadget Sdn.Bhd. is a portable hard disk manufacturer in need of an aggregate plan for July through December. The company has gathered the data as in the table below

#### Cost information

	Cost
Holding cost	RM8/unit/month
Subcontracting	RM80/unit
Regular time labor	RM12/hour
Overtime labor	RM18/hour for hours above 8 hours/worker/day
Hiring cost	RM40/worker
Firing cost	RM80/worker

#### Customer demand

Month	Demand
July	400
August	500
September	550
October	700
November	800
December	700

#### Table Q3c Other information

Current workforce	8 people
Labour hour/ unit	4 hours
Workdays/month	20 days
Beginning inventory	150 units

What will each of the two following strategies cost?

- Vary workforce so that production will meet demand. Current worker is 8 people in June.
- Vary overtime and subcontracting. Maximum overtime per month is 300 units and subcontracting 100 units.

## Question 2

Always One Enterprise has made the following quarterly forecast for aggregate specialty chairs requirements for the next four quarters (it may look like a lot, but it's really light work).

Quarterly	Forecast
1	2900
2	5200
3	3500
4	4400

Each employee currently can produce averages 300 chairs per quarter. To avoid hiring and associated benefit costs, they will authorize each employee to produce up to 30 chairs per quarter on overtime, although they will never authorize using overtime to build inventory. They want to avoid stock outs or backorders at all costs, so if regular work and overtime fail to produce enough, they will hire new workers. Any new hire can also be assumed to be able to work the overtime. Once they do have a new person, they will stop all overtime before they will consider putting anyone on layoff, but have no problem with a layoff if necessary. The current cost to hire a new employee is RM2000 and the layoff cost is RM1200. If they do use overtime, each lamp will cost an additional RM40. If inventory is built up, they will incur a RM3 per chair per quarter inventory cost for each chair in inventory at the end of the quarter.

- a) Develop a modified chase strategy where overtime and inventory can be used but the approach is to minimise inventory levels. Assume there are currently 10 employees. What is the total extra (inventory, hire/layoff and overtime) cost of the plan?
- b) Now develop a modified level strategy where you can hire (or layoff) at the beginning of the year only. There are to be no backorders but inventory and overtime is allowed. What is the total additional cost of this plan?