



**UNIVERSITI TEKNIKAL MALAYSIA MELAKA
PEPERIKSAAN SEMESTER 2
TEST 2 - SESI II 2010/2011**

FAKULTI KEJURUTERAAN PEMBUATAN

KOD MATA PELAJARAN	: BMFP 4513
MATA PELAJARAN	: PERENCANAAN & KAWALAN PENGELUARAN (PRODUCTION PLANNING & CONTROL)
PENYELARAS	: H HAERY IP
KURSUS	: BMFA/BMFB/BMFP/BMFR/BMFU
MASA	: 8.30 PM – 10.30 PM (2 JAM)
TARIKH	: 7 APRIL 2011
TEMPAT	: DEWAN BESAR UTeM

ARAHAN KEPADA CALON:

- 1. Kertas soalan ini mengandungi DUA (2) Bahagian iaitu Bahagian A dan B.**
- 2. Sila jawab SEMUA soalan di Bahagian A dan B.**
- 3. Gunakan muka surat baru untuk setiap soalan yang dijawab.**

**KERTAS SOALAN INI TERDIRI DARIPADA TUJUH (7) MUKA SURAT SAHAJA
(TERMASUK MUKA SURAT HADAPAN)**

PART A

QUESTION 1

a) Contrast independent and dependent demand.

ANS: Independent demand refers to demand for end items; dependent demand refers to usage of subassemblies and component parts which is dependent on demand for a “parent” item. Independent demand is often random and therefore somewhat unpredictable; dependent demand is derived from demand for end items.

[2 Marks]

b) List down TWO assumptions about the MRP system.

ANS: 1) MRP assumes an infinite capacity regardless of the size of the input to the system.
2) Fixed lead times regardless of the lot size.

[2 Marks]

c) What the main advantage of MRP over JIT

ANS: MRP takes forecasts for end product demand into account. In an environment in which substantial variation of sales are anticipated (and can be forecasted accurately), MRP has a substantial advantage.

[2 Marks]

d) Discuss the disadvantages of building your own ERP system.

ANS: Building an ERP system can be a huge challenge. The company may not have qualified manpower to carry out the task, and the mistakes that may result in the process could probably end up costing the company even more than buying off the shelf system.

[2 Marks]

e) Discuss the bullwhip effect in a supply chain.

ANS: Bullwhip effect is the increase of inventories on a supply chain starting at the end of a supply chain with the final customer and working backwards towards the initial supplier (supplier of raw materials).

[2 Marks]

f) Discuss TWO methods that can be used in order to overcome the problem of bullwhip effect.

ANS: All the members in supply chain can share the information about inventory by implementing a system that will enable them to do that. A second method is Vendor Managed Inventory, where a local supplier or distributor will maintain the manufacturer's inventory levels.

[2 Marks]

g) Discuss the concept of postponement in supply chains.

ANS: Delaying the configuration of a product until near the end of the process. Example HP Printer power supply, cord and manuals can be done by the distributor of that region.

[2 Marks]

h) Explain the concept of forward integration.

ANS: Forward integration means that companies develop the ability to produce goods/services previously purchased or actually buying a distributor/retailer.

[2 Marks]

i) Contrast the approach of having many suppliers versus few suppliers in supply chain strategy.

By having an adversarial relationship, companies will usually have many suppliers competing with one another through the use of quotations. The winner would usually be the lowest bidder. But with companies that uses few suppliers, the relationship would be more cordial in nature. Suppliers will stick to that company for a long term, and may participate in improving the quality and reliability of products.

[4 Marks]

PART B

ANSWER ALL QUESTIONS

QUESTION 2

You have seen several methods for lot sizing in MRP. Why is lot sizing important in MRP?.

ANSWER: Lot sizing is important because, at the very least, it impacts costs. But too much attention can be paid to lot sizing, which can result in false accuracy. Also, several lot-sizing methods may all produce satisfactory results. Finally, proper lot size is often not possible to determine until after actual requirements are known.

[5 Marks]

QUESTION 3

What are the disadvantages of enterprise resource planning (ERP)?

ANSWER: ERP is very expensive to purchase, and even more costly to customize; requires major changes in the company and processes to implement; is such a complex program that many companies cannot adjust to it; involves an ongoing process for implementation, often never completed; and expertise in ERP is limited, with staffing an ongoing problem.

[5 Marks]

QUESTION 4

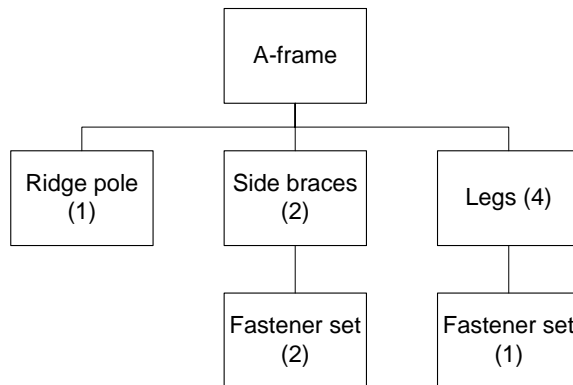
The large parts of a playground A-frame (from which to hang a swing or glider) consist of a ridge pole, four legs, and two side braces. Each pair of legs fastens to the ridge with one fastener set. Each side brace requires two fastener sets for attachment to the legs. Each fastener set includes one zinc-plated bolt, one lock-washer, and one nut.

There is one order outstanding, to make 80 frame kits. There are 200 legs in inventory. There are no other large items in inventory, and no scheduled receipts. Fasteners are available from the small parts area.

- a. Draw the product structure tree
- b. Calculate the net requirements for each part to fulfill the outstanding order.

[10 Marks]

ANSWER:



Part	GR	OH	NR
A-frame	80		80
Ridge pole	80		80
Side braces	160		160
Legs	320	200	120
Fastener set	440		440

QUESTION 5

The time-phased net requirement for the base assembly in a table lamp over next six weeks is as follows:

Week	1	2	3	4	5	6
Requirement	335	240	100	440	300	200

The setup cost for the construction of base assembly is RM 200, and the holding cost is RM 0.30 per assembly per week.

- a. Determine the lot sizes using Silver-meal heuristic

[7.5 Marks]

- b. Determine the lot sizes using the least unit cost heuristic

[7.5 Marks]

ANSWER:

a) Silver Meal - $r = (335, 240, | 440, 300, 200)$

Starting in period 1:

$$C(1) = 200$$

$$C(2) = (200 + (240 \cdot 0.3)) / 2 = 136$$

$$C(3) = (200 + (240)(.3) + (2)(140)(.3)) / 3 = 118.67$$

$$C(4) = 200 + (240)(.3) + (2)(140)(.3) + (3)(440) / 4 = 188 \quad \text{Stop.}$$

Starting in period 4:

$$C(2) = (200 + (300)(.3)) / 2 = 145$$

$$C(3) = (200 + (300)(.3) + (200)(2)(.3)) / 3 = 136.67$$

Hence $y_1 = 335 + 240 + 100 = 675$, $y_4 = 440 + 300 + 200 = 940$

b) LUC - $r = (335, 240, | 100, 440, 300, 200)$

Starting in period 1:

$$200 / 335 = .597$$

$$\frac{200 + (240)(.3)}{(335 + 240)} = .473$$

$$\frac{200 + (240)(.3) + (100)(2)(.3)}{(335 + 240 + 100)} = .492$$

Starting in period 3:

$$200 / 100 = 2$$

$$\frac{200 + (440)(.3)}{(100 + 440)} = .615$$

$$\frac{200 + (440)(0.3) + (300)(2)(.3)}{(100 + 440 + 300)} = 0.6095$$

$$\frac{200 + (440)(0.3) + (300)(2)(.3) + 3(0.3)(200)}{(100 + 440 + 300 + 200)} = 0.6654$$

Hence $y_1 = 335 + 240 = 575$, $y_3 = 100 + 440 + 300 = 840$, $y_5 = 200$

QUESTION 6

Mr. Bego as a Manager of Sedap Tralala Corp. has the option of shipping Pisang Goreng from its Johor plant via container ship or airfreight. The typical shipment has a value of \$75,000. A container ship takes 24 days and costs \$5,000; airfreight takes 1 day and costs \$8,000. Holding cost is estimated to be 40% in either case.

How should shipments be made?

[10 Marks]

ANSWER:

Cost via container ship:

$$\left[24 * \frac{(.40 * 75,000)}{365}\right] + 5,000 = (24 * 82.19) + 5,000 = 1,972.56 + 5,000 = \$6,972.56$$

Cost via airfreight:

$$\left[1 * \frac{(.40 * 75,000)}{365}\right] + 8,000 = (1 * 82.19) + 8,000 = 82.19 + 8,000 = \$8,082.19$$

Therefore, use the container ship as it has a lower total cost.

QUESTION 7

Calculate the available to promise using the following data. There are 100 units on hand.

[5 Marks]

On hand: 100 units

Week	1	2	3	4	5	6
Customer orders	70	70	20	40	10	
MPS		100		100		100
ATP						

ANSWER:

Week	1	2	3	4	5	6
Customer orders	70	70	20	40	10	
MPS		100		100		100
ATP	30	10		50		100

$$\text{ATP1} = 100 - 70 = 30$$

$$\text{ATP2} = 100 - (70 + 20) = 10$$

$$\text{ATP3} = 0$$

$$\text{ATP4} = 100 - (40 + 10) = 50$$

$$\text{ATP5} = 0$$

$$\text{ATP6} = 100 - \text{blank} = 100$$