



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
SEPTEMBER 2014 SESSION

SUBJECT CODE	:	FIB36403
SUBJECT TITLE	:	PRODUCTION & OPERATION MANAGEMENT
LEVEL	:	BACHELOR
TIME / DURATION	:	2.00 PM – 4.30 PM (2.5 HOURS)
DATE	:	4 JANUARY 2015

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
 2. This question paper is printed on both sides of the paper.
 3. Please write your answers on the answer booklet provided.
 4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
 5. This question paper consists of TWO (2) sections. Section A and B. Answer all questions in Section A. For Section B, answer three (3) questions only.
 6. Answer all questions in English.
 7. This paper is for OPEN Text Book Exam.
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THERE ARE 6 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****Question 1**

- (a) Define conversion system with examples in your own words.
(4 marks)
- (b) Discuss the factors to be considered in designing the plant layout.
(6 marks)
- (c) Explain why operations manager have confidence in the demand estimates included in the early part of the master production schedule. Why does the updating of the MRP tend to build this confidence?
(4 marks)
- (d) Explain what companies can do to reduce inventories.
(6 marks)

Question 2

- (a) What are the factors influencing effective capacity and what are all the factors favoring overcapacity and under capacity? Discuss.
(8 marks)
- (b) Discuss the benefits and challenges associated with the implementation of an aggregate planning system.
(6 marks)
- (c) Briefly explain how a company can achieve lower production costs and increase productivity by improving the quality of its products or services.
(6 marks)

SECTION B (Total: 60 marks)**INSTRUCTION: Answer only THREE questions.****Please use the answer booklet provided.****Question 3**

Dewtech Computer Service repairs and services personal computers at its store, and it makes local service calls. It primarily uses part-time State University students as technicians. The company has had steady growth since it started. It purchases generic computer parts in volume at a discount from a variety of sources whenever they see a good deal. Thus, they need a good forecast of demand for repairs so that they will know how many computer component parts to purchase and stock, and how many technicians to hire. The company has accumulated the demand data shown in Table 1, the accompanying table for repair and services calls for the past 12 months.

Table 1: Demand for Repair and Service Calls

<i>Period</i>	<i>Month</i>	<i>Demand</i>	<i>Period</i>	<i>Month</i>	<i>Demand</i>
1	January	37	7	July	43
2	February	40	8	August	47
3	March	41	9	September	56
4	April	37	10	October	52
5	May	45	11	November	55
6	June	50	12	December	54

- a) Forecast period 13, from which it wants to consider exponential smoothing forecasts using smoothing constants (α) equal to 0.5, with given forecast value of period 2 is 37.

(8 marks)

- b) The data in Table 1 appears to follow an increasing linear trend. The company wants to compute a linear trend line to see, if it is more accurate than the exponential smoothing in Question (a). Justify your answer. (Hint: MAD or MSE)

(12 marks)

Question 4

- a) If the explosion of the bill of material tells MRP how much of each part is needed, explain how does MRP learn when each of these parts is needed?
(4 marks)
- b) The following is a list of components required to produce one unit of end item P: 2 A's, 3 B's, 3 C's
A: 5 M's, 2 R's
B: 1 D, 3 N's.
C: 1 T, 4 N's
M: 1 N
Determine the number of N's that will be needed to make 60 P's if on-hand inventory consists of 15 P's, 10A's, 20 B's, 10 C's, 100 N's, 300 T's, and 200 M's.
(4 marks)
- c) Table 2 shows information of a Pan Steel Drum, construct a product tree diagram and develop a material requirements plan that will yield 400 units of product P at the start of week 7.

Table 2: Pan Steel Drum Details

<i>Item</i>	<i>Parent</i>	<i>Quantity for 1 of Parent</i>	<i>Currently on-hand</i>	<i>Scheduled Receipt(in wk)</i>	<i>Lead Time</i>	<i>Order Quantity</i>
Pan Steel Drum (P)	-	-	-	-	1	Lot-for-lot
Skirt (A)	P	1	100	0	1	Lot-for-lot
Belly (B)	P	1	0	0	1	450
Playing surface (C)	A,B	1,2	90	100 (wk 2)	2	600
Pan Stand (D)	B	2	50	80 (wk 2)	2	Lot-for-lot

(12 marks)

Question 5

- a) The maker of the world-famous Nixie Semiconductor needs to design a product layout for a new product, KK2 Chip. The company plans to use this new production line eight hours a day in order to meet projected demand of 1,440 cases per day. The following table 3 describes the tasks involved in the production of a KK2 Chip. As an operation engineer, calculate the efficiency for the balance which uses the minimum number of workstations.

Table 3: Task Time of a KK2 Chip

<i>Task</i>	<i>Predecessor</i>	<i>Time (seconds)</i>
U	-	4
V	U	14
W	V	12
X	V	10
Y	W	6
Z	X,Y	8

(12 marks)

- b) To be competitive, many fast food restaurants expand their menus to offer a great wide option to their customers. Indicate in what ways the expansion of menu offerings creates problems for inventory management.

(8 marks)

Question 6

- a) A small business owner is contemplating the addition of another product line. Capacity increases and equipment will result in an increase in annual fixed costs of RM 50,000. Variable costs will be RM 25 per unit.
- i. What unit selling price must the owner obtain to break-even on a volume of 2,500 units a year?
(3 marks)
- ii. Because of market conditions, the owner feels a revenue of RM 47 is preferred to the value determined in part a. What volume of output will be required to achieve a profit of RM 16,000 using this revenue?
(3 marks)
- b) Employ any suitable lean concept, and describe what could be done on below Figure 1 for workplace housekeeping.



Figure 1: Workplace

- (6 marks)
- c) List and briefly define the eight types of waste (or muda) that often occur in firms which must be eliminated in implementing lean systems.
(8 marks)

END OF QUESTION

Appendix 1

Master Schedule	1	2	3	4	5	6	7	8
Product P								
		Week						
	1	2	3	4	5	6	7	8
Gross requirements								
Schedule receipts								
Projected on hand								
Net requirements								
Planned order receipt								
Planned order release								
		Week						
	1	2	3	4	5	6	7	8
Gross requirements								
Schedule receipts								
Projected on hand								
Net requirements								
Planned order receipt								
Planned order release								
		Week						
	1	2	3	4	5	6	7	8
Gross requirements								
Schedule receipts								
Projected on hand								
Net requirements								
Planned order receipt								
Planned order release								

		Week						
	1	2	3	4	5	6	7	8
Gross requirements								
Schedule receipts								
Projected on hand								
Net requirements								
Planned order receipt								
Planned order release								
		Week						
	1	2	3	4	5	6	7	8
Gross requirements								
Schedule receipts								
Projected on hand								
Net requirements								
Planned order receipt								
Planned order release								

		Week						
	1	2	3	4	5	6	7	8
Gross requirements								
Schedule receipts								
Projected on hand								
Net requirements								
Planned order receipt								
Planned order release								