UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2010/11

COURSE NAME	:	PRODUCTION PLANNING AND CONTROL
COURSE CODE	:	BPC 2213 / BPC 22103
PROGRAMME	:	2 BPB
EXAMINATION DATE	:	APRIL/MAY 2011
DURATION	:	2 HOURS 30 MINUTES
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF 7 PAGES

Q1 Below are Bill of material for product A

Table (Q1a): BOM product A

	Product A
Parts	Quantity (unit)
B	3
C	1
D	3

Table (Q1b): BOM component B

	Component B
Parts	Quantity (unit)
X	2
Y	2

Table (Q1c): BOM component C

	Component C
Parts	Quantity (unit)
U	1
V	4

Table (Q1d): BOM component D

	Component D
Parts	Quantity (unit)
X	3
V	2

Based on the table Q1a:

(a) Illustrate a multi level BOM Product Structure Tree. (5 marks)

(b) The MPS calls for the completion of 100 As in week 7 and 100 As in week 10. There is schedule receipt at 50 at week 3 and 6. Production lot for A is 60. The remaining component production lot size is as per lot for lot. Opening inventory for A is 10, B is 50, C is 50, D is 10, X is 30, Y is 30, U is 50 and V is 30. Lead time for A is 2 weeks, B is 2 weeks, C is 1 week, D is 1 week, X is 1 week, Y is 1 week, U is 2 weeks and V is 2 weeks.

Propose a MPS (Master Planning Schedule) using the MPS table in Appendix I.

(15 marks)

Q2

Table Q2(a)(i): Route file

Routing: Parts	Setup Time (hours)	Run time (hours/piece)
123	2	3
456	3	1

Table Q2(a)(ii): Open Orders for parts file

Week	1	2	3
123	12	8	5
456	15	5	5

Table Q2(a)(iii): Planned Orders for parts file

1	2	3
0	5	10
0	10	15

Using the information in table Q2(a)(i), Q2(a)(ii) and Q2(a)(iii):

(a) Calculate the release orders load.

(5 marks)

(b) Calculate the planned orders load.

(5 marks)

(c) Assuming that available time is 80 hours/week, utilization is 85% and efficiency is 110%;

Complete the following load report.

Week	1	2	3
Released load 123			
456			
Planned load 123			
456			
Total load			
Rated Capacity			
(Over)/Under			

(10 marks)

Q3 An order for 150 of a product is processed on operation A and operation B. The setup time for A is 60 minutes and the run time per piece is 12 minutes. The setup time for B is 40 minutes and the run time is 7 minutes per piece. It takes 25 minutes to move a lot between A and B. Wait time between A and B is 2 and between B to store 1 hour and move time to the stores is 20 minutes. There is no queue at either workstation.

(a) Calculate the total manufacturing lead time for the order.

(10 marks)

(b) The production manager decided to overlap the two operations by splitting the lot of 100 into two lots of 90 and 60. The wait time between A and B and B to store are eliminated. The move time remain the same. Setup on operation B cannot start until the first batch arrives.

Calculate the total manufacturing lead time for the above.

(10 marks)

Q4 A company producing blenders has a central supply attached to its factory and two distribution centers.

Distribution Center A forecasts demand at 25, 30, 55, 50 and 30 units over the next 5 weeks and has 100 blenders in transit that are due in week 2. The transit time is 2 weeks, the order quantity is 100 units, and there are 50 units on hand.

Distribution Center B forecasts demand at 95, 85, 100, 70 and 50 units over the next 5 weeks. The transit time is 1 week, the order quantity is 200 units, and there are 100 units on hand.

The Central Warehouse has a lead time of 2 weeks, the order quantity is 500 units, and there are 400 units on hand.

(a) Calculate gross requirements, projected available and planned order release for the Distribution Center A.

(5 marks)

(b) Calculate gross requirements, projected available and planned order release for the Distribution Center B.

(5 marks)

(c) Calculate gross requirements, projected available, and planned order release for the Central Warehouse.

(10 marks)

Q5 Tom and Jerry produced ice cream and to develop a level production plan. The expected opening inventory is 120 cartons and company want to reduce that to 80 cartons by the end of the planning period. The number of working days is the same for each period. There are no back orders. The expected demand is as follows:-

Table Q5: Expected demand

Period	1	2	3	4	5	Total
Forecast (cartons)	130	110	140	120	100	600

(a) Calculate how much should be produces each period.

(2 marks)

(b) Calculate the ending inventory for each period.

(5 marks)

(c) The cost of carrying inventory is RM15 per carton per period.

Calculate the total cost of carrying inventory based on the ending inventory.

(3 marks)

(d) The company decided that they would like to maintain the ending inventory at 80 cartons at every period.

Develop a production plan that shows the change of production by using Chase strategy.

(5 marks)

(e) There are cost associated with the changing the production level. The changing of production level is RM 10 per cartons and the carrying cost is at RM15 per cartons.

Calculate the total cost of the plan.

(5 marks)

END OF QUESTION PAPER

APPENDIX I

NAME:……………………..
MATRIX NO:………………….

	Week	1	2	3	4	5	6	7	8	9	10
	Gross Requirement										
Product A	Schedule Receipts										
Lead Time:	Projected Available										
	Net Requirement										
	Planned Order Receipt										
	Planned Order Release										
	Gross Requirement										
Part:	Schedule Receipts										
Lead Time:	Projected Available										
	Net Requirement										
	Planned Order Receipt										
	Planned Order Release										
	Gross Requirement										
Part:	Schedule Receipts										
Lead Time:	Projected Available										
	Net Requirement										
	Planned Order Receipt										
	Planned Order Release										
	Gross Requirement										
Part:	Schedule Receipts										
Lead Time:	Projected Available										
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Part:	Schedule Receipts										
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Lead Time	Projected Available										
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	Gross Requirement										
Part:	Schedule Receipts										
Lead Time:	Projected Available										
	Net Requirement										
	Planned Order Receipt										
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