UNIVERSITI SAINS MALAYSIA

SEMESTER EXAMINATION

APRIL 1993

MASTER OF BUSINESS ADMINISTRATION

AGW 517 - OPERATION MANAGEMENT

TIME : [3 HOURS]

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SECTION I

Answer FOUR of the six questions in this section. Each question carries 8 marks.

1.   The "chase" strategy and the "level" strategy represent two extremes in production planning. Define each one and describe the type of environment in which each would work best.

2.   Why are competitive priorities important considerations for master production scheduling? Explain.

3.   How can MRP users report simultaneous improvements in inventory, customer service, and productivity? Isn't there a fundamental trade-off where improvement in one comes at the expense of another? Explain.

4.   Discuss the JIT approach and its impact on choices in the various decision areas in an organisation's operations strategy.

5.   Draw an OC curve and explain how it can help management settle on the design parameters for a single-sampling plan?

6.   What are the different types of inventory? What are the primary and secondary levers that can be used to reduce each of these types of inventory?

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SECTION III

Answer all <u>SIX</u> questions. Each question carries 8 marks.

1. For the following situation, identify the parameters for a Q system and its equivalent P system.
    Daily demand for mini-wheels, a popular toy, is normally distributed with a mean of 60 cases and a standard deviation of 10 cases. The cost of placing an order is $6, and annual holding costs are 20% of the unit price of $1.20. We want a 90% cycle-service level and the lead time is 4 working days. We can assume 200 working days.

2. Given the accompanying supply, demand, cost, and inventory data for a firm that has a constant work force and wishes to meet all demand (i.e., no back orders), allocate production capacity to satisfy demand at minimum cost using the Tableau method. Indicate the Production Plan and also the cost associated with it.
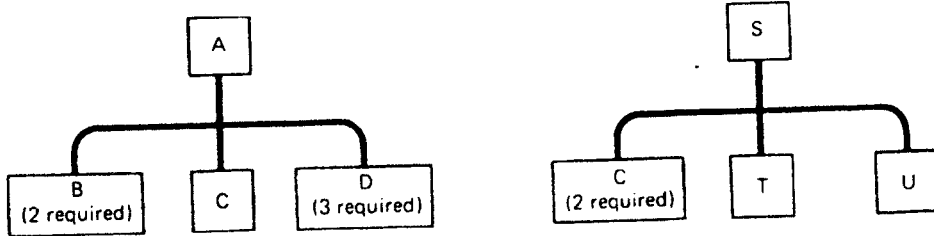
Demand and Supply Capacity (Units)

Period	Demand	Regular Time	Overtime	Subcontract
1	100	60	18	1,000
2	50	50	15	1,000
3	70	60	8	1,000
4	80	65	20	1,000

Initial inventory	= 20 units
Final inventory	= 25 units
Regular time cost/unit	= $100
Overtime cost/unit	= $125
Subcontracting cost/unit	= $130
Carrying cost/unit/period	= $2

Per.		1	2	3	4	UNUSED CAPACITY	TOTAL CAPACITY
	Beginning Inventory						
1	Regular Time						
	Overtime						
	Sub-contract						
2	Regular Time						
	Overtime						
	Sub-contract						
3	Regular Time						
	Overtime						
	Sub-contract						
4	Regular Time						
	Overtime						
	Sub-contract						
	Requirements						

...4/-

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6. The product structures for end items A and S are shown below: All items have a one-week lead time. Currently there are 20 units of A available, 15 units of S, and 90 of C. The standard lot sizes are 50 for A, 35 for S, and 100 for C. The master production calls for 20 units of item A and 15 units of item S for each of the next five weeks. An open order for 100 units of item C is scheduled for receipt in week 1. Create the MRP records for items A, S, and C.

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        A                                    S
   ┌────┼────┐                          ┌────┼────┐
   B    C    D                          C    T    U
(2 required)  (3 required)          (2 required)
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Item: Description:						Lot Sizes: Lead Time: Safety Stock:				units weeks units		
Date	1	2	3	4	5	6	7	8	9	10	11	12
Gross requirements												
Scheduled receipts												
Projected on hand												
Planned receipts												
Planned order releases												

Item: Description:						Lot Sizes: Lead Time: Safety Stock:				units weeks units		
Date	1	2	3	4	5	6	7	8	9	10	11	12
Gross requirements												
Scheduled receipts												
Projected on hand												
Planned receipts												
Planned order releases												

Item: Description:						Lot Sizes: Lead Time: Safety Stock:				units weeks units		
Date	1	2	3	4	5	6	7	8	9	10	11	12
Gross requirements												
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