

IMT- 89

MATERIAL REQUIREMENT PLANNING

Notes:

- Write answers in your own words as far as possible and refrain from copying from the text books/handouts.
- Answers of Ist Set (Part-A), IInd Set (Part-B), IIIrd Set (Part – C) and Set-IVth (Case Study) must be sent together.
- Submit the assignments in IMT CDL H.O. along with the assignments Question Papers for evaluation .
- Only hand written assignments shall be accepted.

A. First Set of Assignments

5 Questions, each question carries 1.5 marks.

B. Second Set of Assignments

5 Questions, each question carries 1.5 marks.

C. Third Set of Assignments

5 Questions, each question carries 1.5 marks. Confine your answers to 150 to 200 Words.

D. Forth Set of Assignments

Two Case Studies : 7.5 Marks. Each case study carries 3.75 marks.

SECTION - A

- What is the role of Inventory in a firm?What are the performance metrics of Inventory?
- How is the independent and dependent demand related to the rationale behind the development of MRP?
- A master production schedule is a vital component of planning and control in Manufacturing.Discuss with examples.
- What are the main assumptions to be kept in mind while Setting up a MRP system in an organisation?Discuss with examples.
- Level by Level computation of requirement by MRP reduces the likelihood of problems in handling multiple parent demands. How are common items treated by MRP?

SECTION - B

- What are the different methods of LOT Sizing?Explain with examples.
- The net requirements for a material from an MRP schedule are:

	WEEK							
	1	2	3	4	5	6	7	8
NET REQUIREMENTS	1000	0	1300	800	1200	1300	0	800

- It costs \$400 to change over the machines for this material in the affected work center. It costs \$0.40 per unit when one unit of this material must be carried in inventory from one week to the next.
 - Identify the lot-sizing method that results in the least carrying and changeover costs for the 8-week schedule.
- What are the major roles of Bill Of Material?Explain the concept of transient assemblies.

4. Explain the five major inputs that are used by MRP to determine correct inventory and order status of each item. Give Examples.

5. A realistic MPS is a plan that is subject to continuous review and adjustment. Do you agree? Support your answer with appropriate examples.

SECTION - C

Q1. What are the problems that need to be monitored to ensure the healthy functioning of MRP programs? How are these problems monitored?

Q2. What are vertical priority dependence and horizontal priority dependence?

Q3. What is planning execution loop in MRP? How do we close the execution loop?

Q4. How MRP can be used in JIT environments?

Q5. Flow line operations and KANBAN are enhancement to MRP and not a replacement. Discuss

CASE STUDY - 1

The Hunicut and Hallock Corporation makes two versions of the same basic file cabinet, the TOL (Top-of-the-line) five drawer file cabinet and the HQ (High-quality) five drawer filing cabinet.

The TOL and HQ use the same cabinet frame and locking mechanism. The drawer assemblies are different although both use the same drawer frame assembly. The drawer assemblies for the TOL cabinet use a sliding assembly that requires *four* bearings per side whereas the HQ sliding assembly requires *only two* bearings per side. (These bearings are identical for both cabinet types.) 100 TOL and 300 HQ file cabinets need to be assembled in week #10. No current stock exists.

Questions :

1. Develop a material structure tree for the TOL and the HQ file cabinets.
2. Develop a gross material requirements plan for the TOL and HQ cabinets in the previous example.

CASE STUDY - 2

(Ref to the above Case Only)

Develop a net material requirements plan for the TOL and HQ file cabinets in the previous problems assuming a current on-hand finished goods inventory of 100 TOL cabinets. The lead times are given below.

- 1 Painting and final assembly of both *HQ and TOL* requires 2 weeks.
- 1 Both *cabinet frames* and lock assembly require 1 week for manufacturing.
- 1 Both *drawer assemblies* require 2 weeks for assembly.
- 1 Both *sliding assemblies* require 2 weeks for manufacturing.
- 1 *Bearings* require 2 week to arrive from the supplier.

If the TOL file cabinet has a gross material requirements plan as shown below, no inventory, and 2 weeks lead time is required for assembly, what are the order release dates and lot sizes when lot sizing is determined using lot-for-lot? Use a holding cost of \$2.00 and a setup cost of \$20.00, and assume no initial inventory.

Gross Material Requirements Plan										
Week	1	2	3	4	5	6	7	8	9	10
TOL			50		100		50			100

If the TOL file cabinet has a gross material requirements plan as shown below, no inventory, and 2 weeks of lead time is required for assembly, what are the order release dates and lot sizes when lot sizing is determined by EOQ (Economic Order Quantity)? Use a holding cost of \$2.00 and a setup cost of \$20.00, and assume no initial inventory.

Gross Material Requirements Plan										
Week	1	2	3	4	5	6	7	8	9	10
TOL			50		100		50			100