SCM Unit-3

Material Requirements Planning (MRP) is a production planning and inventory control system that helps organizations manage the manufacturing process by ensuring that materials and components are available when needed for production. The primary goal of MRP is to optimize production processes and minimize inventory carrying costs. Here's a general overview of the MRP procedure:

1. **Bill of Materials (BOM):**
   * Create a Bill of Materials, which is a comprehensive list of all the raw materials, components, sub-assemblies, and finished products required to manufacture the end product. This hierarchical structure outlines the relationship between each component and the final product.
2. **Master Production Schedule (MPS):**
   * Develop a Master Production Schedule that outlines the production plan, specifying the quantity and timing of each finished product to be produced over a specific time period. The MPS is a crucial input to the MRP system.
3. **Inventory Status:**
   * Determine the current inventory levels of all materials and components. This includes both on-hand quantities and quantities on order.
4. **Gross Requirements Calculation:**
   * Calculate the gross requirements for each component and material by considering the quantities specified in the MPS. This represents the total demand for each item during a specific time period.
5. **Net Requirements Calculation:**
   * Adjust the gross requirements by subtracting the current on-hand inventory and quantities on order. The result is the net requirements, representing the additional quantity needed to meet the production schedule.
6. **Scheduled Receipts:**
   * Identify scheduled receipts, which include orders that have already been placed but are not yet received. These can be purchase orders or work orders for in-house production.
7. **Planned Order Release:**
   * Generate planned order releases for materials and components that need to be ordered or produced. The system considers lead times for procurement and production when determining the release dates for these orders.
8. **Order Generation:**
   * For materials and components with net requirements that cannot be satisfied by existing inventory or scheduled receipts, generate purchase orders or production orders to fulfill the demand.
9. **Order Tracking and Updates:**
   * Regularly update the system with actual receipts and usage of materials. As orders are fulfilled, adjust the inventory levels and update the MRP records.
10. **Regeneration of Plans:**
    * Periodically regenerate the MRP plans to account for changes in demand, lead times, and inventory levels. This helps to ensure that the production plan remains aligned with current conditions.
11. **Capacity Planning (Optional):**
    * In some cases, MRP systems may incorporate capacity planning to ensure that production resources, such as machinery and labor, are available to meet the production schedule.
12. **Monitoring and Control:**
    * Continuously monitor the MRP system outputs, including order status, inventory levels, and production schedules. Address any exceptions or issues promptly to maintain the efficiency of the production process.

Implementing MRP software can automate many of these steps, improving accuracy and efficiency in the planning process. The successful implementation of MRP requires collaboration between various departments, including production, procurement, and inventory management.