**MRP I SYSTEMS AND MRP II SYSTEMS SUGGESTED EXERCISE-2**

We want to make the Material Requirements Planning for the following products:

|  |  |
| --- | --- |
| 1  1  1  1  2 | 1  2  2  1  1 |

P1, P2 and C3 are independent demand products; that is, they are manufactured under external customers’ demand. P1 and P2 are finished products and C3 is a component sold as a spare part.

The production plan is the following:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Products\Date | 01-Apr | 08- Apr | 15- Apr | 22- Apr |
| P1 | 100 | 80 | 100 | 120 |
| P2 | 200 | 200 | 200 | 250 |
| C3 | 0 | 100 | 100 | 0 |

Besides, we know the available stock and the safety stock of each product, their manufacture term, the percentage of failures manufactured and the manufacture lot, shown in the following chart:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PRODUCTS | SFT STOCK | MANUF. TERM | % FAILURES | AVAIL STOCK | LOT |
| P1 | 50 | 1 | 0 | 70 | LbL |
| P2 | 100 | 1 | 0 | 120 | LbL |
| S11 | 0 | 2 | 0 | 20 | M 100 |
| S12 | 0 | 2 | 0 | 20 | M 50 |
| C1 | 100 | 1 | 10 | 50 | LbL |
| C2 | 100 | 1 | 10 | 50 | LbL |
| C3 | 100 | 1 | 10 | 150 | M 100 |

Complete the files for each component and define the launches or manufacture orders for each one.

In this case, we have two final products and we will do the same as in the above example, but the sequence in this case is:

The production schedule sets the gross requirements of the Level 0 products with the stock, safety stock and failures we determine the net launches. These are exploited to calculate the gross requirements of the Level 1 components. The same way, we determine the Level 1 net launches and so on until the components in the last level of the Program.

When an assembly or component is included in two different levels, this component or assembly will be placed in its lowest level for the calculation of the launches of manufacture orders.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LEVEL 0 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Gross requirements |  |  |  |  |  |  |  |  |
| Available stock |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  |  |
| Launches |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
| Gross requirements |  |  |  |  |  |  |  |  |
| Available stock |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  |  |
| Launches |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LEVEL 1 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Gross requirements |  |  |  |  |  |  |  |  |
| Available stock |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  |  |
| Launches |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
| Gross requirements |  |  |  |  |  |  |  |  |
| Available stock |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  |  |
| Launches |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LEVEL 2 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Gross requirements |  |  |  |  |  |  |  |  |
| Available stock |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  |  |
| Launches |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
| Gross requirements |  |  |  |  |  |  |  |  |
| Available stock |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  |  |
| Launches |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |
| Gross requirements |  |  |  |  |  |  |  |  |
| Available stock |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  |  |
| Launches |  |  |  |  |  |  |  |  |

We want to calculate the manufacturing capacity in the working centres for the established production schedule.

Determine the workload for each working centre (assembly, C100, C200, C300 and C400), indicating the dates when overtime is necessary to meet the production schedule established, if in each working centre, we start in the following conditions:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| PRODUCT | No STAGE | W.LOAD | TERM | LOT | PREP T. (hours). | OPER T. (minutes). |
| P1 | 1 | Assembly | 1 | **200** | **4** | **20** |
| P2 | 1 | Assembly | 1 | **200** | **3** | **14** |
| S11 | 1 | c100 | 1 | **100** | **1** | **4** |
|  | 2 | c200 | 1 | **100** | **5** | **4** |
| S12 | 1 | c100 | 1 | **100** | **1** | **4** |
|  | 2 | c200 | 1 | **100** | **5** | **6** |
| C1 | 1 | c300 | 1 | **200** | **2,5** | **5,5** |
| C2 | 1 | c300 | 1 | **200** | **1** | **7** |
| C3 | 1 | c400 | 1 | **200** | **2,75** | **4,5** |

Besides, represent graphically the results got.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  |  |  |  |  |  |  |  |
| P1 | ASSEMBLY |  |  |  |  |  |  |  |  |
| P2 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| S11 | C100 |  |  |  |  |  |  |  |  |
| C200 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| S12 | C100 |  |  |  |  |  |  |  |  |
| C200 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| C1 | C300 |  |  |  |  |  |  |  |  |
| C2 | C300 |  |  |  |  |  |  |  |  |
| C3 | C400 |  |  |  |  |  |  |  |  |

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|  |  |  |  |  |  |  |  |  |
| ASSEMBLY |  |  |  |  |  |  |  |  |
| CA. MAX |  |  |  |  |  |  |  |  |
| C100 |  |  |  |  |  |  |  |  |
| CA. MAX |  |  |  |  |  |  |  |  |
| C200 |  |  |  |  |  |  |  |  |
| CA. MAX |  |  |  |  |  |  |  |  |
| C300 |  |  |  |  |  |  |  |  |
| CA. MAX |  |  |  |  |  |  |  |  |
| C400 |  |  |  |  |  |  |  |  |
| CA. MAX |  |  |  |  |  |  |  |  |