## Assessment 9 MRP

1. The demand for subassembly SA is 100 units in week 7. Each unit of SA requires 1 unit of TB and 2 units of UC. Each unit of T requires 1 unit of VD, 2 units of WE and 1 unit of XF. Finally, each unit of UC requires 2 units of YG and 3 units of ZH. One firm manufactures all items. It takes 2 weeks to make SA, 1 week to make TB, 2 weeks to make UC, 2 weeks to make VD, 3 weeks to make WE, 1 week to make XF, 2 weeks to make YG and 1 week to make ZH. Currently the inventory on hand as in Table Q9.1.

Table Q9.1: On hand inventory

| Item | On Hand Inventory |
| :---: | :---: |
| SA | 20 |
| TB | 20 |
| UC | 40 |
| VD | 30 |
| WE | 30 |
| XF | 25 |
| YG | 240 |
| ZH | 40 |

a) Construct a product structure. Identify all levels, parents and components.
b) Prepare time phased product structure
c) Construct a net material requirements plan using the following on hand inventory as in Table Q9.1.
d) Apart from that, the management also would like to know the inventory management cost on special part if using fixed order quantity (FOQ) 50 units for the master production schedule as in the Table Q9.2. Lead time is 1 week.

Table Q9.2 Special part management

| Week |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Gross requirement |  | 50 |  | 35 | 15 |  | 70 | 50 |  |
| Schedule receipts |  |  |  |  |  |  |  |  |  |
| Projected on hand |  |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  |  |  |
| Planned order <br> receipts |  |  |  |  |  |  |  |  |  |
| Planned order <br> releases |  |  |  |  |  |  |  |  |  |

2. The company also implemented Material Requirement Planning (MRP) system in bracket department. As an expert in MRP system, you are required to assist this company to prepare a production plan based on highlighted below. This bracket is made up of a base, two springs and four clamps. The base is assembled from one clamp and two housings. Each clamp has one handle and one casting. Each of housing has two bearings and one shaft. There is no inventory in hand.
a) Design a product structure noting the quantities for each item and show the low level coding.

Determine the gross quantities needed of each item if you are to assemble 50 brackets.

