**Yertle Products, LLC**

**(Apologies to Dr. Seuss)**

Nizzard Products Assembly manufactures two different finished goods which are sold under the brand names of Yooks and Zooks. The current Master Production Schedule for Yooks and Zooks in Weeks 3 through 12 is given below, and product structure trees are shown on subsequent pages. Item C, a component used in each of the products, is prone to failure in units in the field and thus has a spare part demand. The spare part demand is currently forecasted to be 150,000 units per week in Weeks 1 through 12. Except as specifically noted the lead time for all items is one week.

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| **Master Production Schedule** | | | | | | | | | | |
| **Week** | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **Yooks** | 12000 | 10000 | 8000 | 11000 | 11500 | 13000 | 12000 | 9000 | 10000 | 10500 |
| **Zooks** | 15000 | 17000 | 18000 | 20000 | 21500 | 23000 | 24000 | 25000 | 27000 | 26000 |

Relevant information on the production, ordering, and inventorying of all items is given below:

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| **Yooks** | At the beginning of Week 1 28,000 Yooks will be in finished goods inventory with 2000 being set aside as safety stock. Yooks are made in batches of 1,000. |

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| **Zooks** | At the beginning of Week 1 35,000 Zooks will be in finished goods inventory with 2000 being set aside as safety stock. Zooks are made in batches of 1,000. |

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| **Item A** | At the beginning of Week 1 17,000 units of Item A will be in inventory with 3000 being set aside as safety stock. Item A is made in batches of 5,000. There will be one Scheduled Receipt of Item A of 12,000 units in Week 1. |

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| **Item B** | At the beginning of Week 1 1,000,000 units of Item B will be in inventory with no units being held in safety stock. Item B is made in batches of 100,000. There will be two Scheduled Receipts of 900,000 units in Weeks 1 and 2. |

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| **Item C** | At the beginning of Week 1 300,000 units of Item C will be in inventory with 20,000 being set aside as safety stock. Item C is made in batches of 100,000. |

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| **Item D** | At the beginning of Week 1 1.5 million units of Item D will be in inventory with no units being held in safety stock. Item D is made in relatively small batch sizes of 10,000. |

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| **Item E** | At the beginning of Week 1 1 million units of Item E will be in inventory with 100,000 units held in safety stock. Item E is made in batches of 1,000,000 units. |

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| **Item F** | This item is different in character from all the others used by Thidwick. Item F is a liquid glue used in assembling Item B and G. Only 0.31 (zero point three one) fluid ounce of F is used to make each unit of G, and 0.23 (zero point two three) fluid ounce is used to make Item B. The glue is widely available from many suppliers who must offer rapid delivery on orders to be competitive. Consequently, lead time on the item is effectively zero. The item is sold in pallets of 24 five-gallon containers. As many (or as few) pallets as needed can be ordered at one time but the pallets cannot be broken, i.e., individual containers can't be ordered. At the beginning of Week 1 100 five-gallon containers will be in inventory, but no safety stock is kept on this item given the fast response of the vendor. Further, an overall estimate of 6% of the glue ordered is lost in the production process and can’t be used in building Widgets and Gadgets. Some weeks ago a special price was negotiated for a one-time purchase of glue from another vendor. That schedule receipt of glue will be for 75 pallets and will be arriving in Week 1. |

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| **Item G** | At the beginning of Week 1 9,000 units of Item G will be in inventory with 3,000 being held as safety stock. Item G is made in batches of 3,500 units. |

1. Develop a spreadsheet-based MRP plan for Weeks 1 through 12 considering all three products and all items used in those products. Show the entire plan on a single worksheet with particular emphasis on the pattern of orders for Item E and Item F. Currently you are conducting MRP planning in Week 0 and looking ahead through the 12-week planning horizon.
2. Using the plan you built in Part a above, employ simulation to determine the stability of Item F orders through the 12-week planning horizon. Simulate weekly demand for each of the three products using a triangular distribution. The original forecasts should be the center of each distribution (the most likely value) and the end points should be 10% above and 10% below the most likely. Run your simulation for 5000 iterations. Show and describe the simulation impacts on the weekly orders for Item F.

**Instructions:** Your deliverable will be a single functioning Excel spreadsheet with your solution to each part of this problem on a separate worksheet page. For Part b any text you have describing the simulation results can be shown in a text box on the worksheet page. The spreadsheet file will be uploaded to Canvas by the assignment deadline stated on the Lesson Plan. Include a cover page for your file which lists your name and the names of any other group members deserving credit for this work. Group sizes may be no larger than 4, and only one group member need submit the final deliverable.

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(4)

Yook

(.23 OZ)

(3)

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E

E

E

D

E

D

F

B

D

C

A

Zook

(.23 OZ)

(.31 OZ)

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B

D

E

F

F

E

E

D

C

G

A

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