

### Example Paper

This paper is intended for practice purposes only. It is intended for those studying for the Institute of Operations Management Level 3 Certificate in Operations Management. A separate document contains an outline marking scheme. This paper is laid out in the same way as the formal external examination paper for Unit C2 of the Certificate. However, whilst the questions in this paper have been used in the past the questions in any future paper will differ from those contained here. The Institute recommends that the candidate attempts the full paper in conditions as close as possible to those in a formal examination before looking at the marking scheme.

#### Instructions and Important Information

- The exam will last for three hours.
- The exam consists of two sections.

<b><u>Section 1</u></b>	<ul style="list-style-type: none"><li>• Consists of 10 short answer questions.</li><li>• <u>You must answer 8 questions</u>.</li><li>• 5 marks per question.</li></ul>	40 marks
<b><u>Section 2</u></b>	<ul style="list-style-type: none"><li>• Consists of 5 long answer questions.</li><li>• <u>You must answer 3 questions</u>.</li><li>• 20 marks per question.</li></ul>	60 marks
		Total: 100 marks

- You should only use the answer book and paper provided. Ensure that any additional sheets are securely attached to your answer book.
- In your answer booklet, identify each of your answers clearly by number.
- You can answer the questions in any order you wish.
- Remember to budget your time using the marks per section as a guide
- You must return this exam question paper with your answer booklet following the exam.
- **If you choose to answer Question 15, complete the blank MRP matrix (supplied separately). Attach it to your answer booklet.**

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**Part 1 - Short Answer Questions**

**Choose 8 of 10    5 points per question**

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**Q1**

Identify the FIVE primary activities of Porter's Value Added Chain and explain how a company can improve its overall profit by "adding value".

**Q2**

Explain what is meant by vertical integration in the supply chain for a manufacturing company and identify ways in which a manufacturer might achieve:

- a) Forward integration
  - b) Backward integration
  - c) Virtual integration
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**Q3**

State the reason that companies forecast demand.  
List BOTH the items that are subject to forecasting and those not subject to forecasting for a named type of business with which you are familiar, stating the characteristics of a good or useful demand forecast.

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**Q4**

Identify the main categories or types of inventory that a manufacturing company might hold. State briefly the reason the company holds each type. List the items not classified as "inventory".

**Q5**

Explain what is meant by the term ABC Analysis. With reference to guideline or approximate percentages, explain briefly how a company might use ABC analysis to help manage its inventory.

**Q6**

What is a master production schedule or MPS? Briefly describe the relationship between the MPS and:

- a) Material Requirements Planning – MRP.
- b) Rough Cut Capacity Planning – RCCP.

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**Q7**

Describe a Bill of Material and explain how the BOM might be used by a manufacturing company. From the indented BOM below, draw a simple parent/child or tree diagram of the Bill of Material.

Wheel

Rim (1)  
Spokes (60)  
Hub assembly (1)  
    Hub (1)  
    Bearing (1)  
    Oil seal (2)

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**Q8**

Describe the function of Capacity Requirements Planning. Describe FOUR factors that might influence or constrain capacity.

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**Q9**

- a) Describe the difference between a traditional and a cellular shop floor layout.
  - b) Briefly discuss why a manufacturer might decide to move from a traditional to a cellular approach.
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**Q10**

Describe FOUR characteristics of a good inventory identification system and explain why it is important.

**End of Part 1 – Short Answer Questions**

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**Part 2 – Long Answer Questions  
Answer THREE Questions  
20 marks per question**

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**Q11**

a) Describe how planning, purchasing and movement of materials within a company are different under an MRP II and JIT system and discuss the advantages and disadvantages of each.

**(12 marks).**

b) Identify an industry sector or type of production process, which is suited to either an MRP II approach or a JIT approach and explain why.

**(8 marks).**

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**Q12**

Discuss the changing nature and role of procurement management within the modern supply chain. In your answer, consider why and how many companies are abandoning the traditional cost and price focused procurement model – in favour of customer-supplier partnerships.

**(20 marks)**

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**Q13**

Discuss what is meant by “The Supply Chain”, explaining why it is important and how it is changing in the 21<sup>st</sup> century.

**(20 marks)**

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**Q14**

a) In the context of inventory management, explain what is meant by the Re-order Point and Periodic Review systems of inventory control. Include a simple diagram to illustrate the principle and operation of each system.

**(6 marks)**

b) A company uses 2,000 green widgets per week. The replenishment lead-time for green widgets is 4 weeks. Calculate the Re-order Point that should be set for this component, assuming you do not hold any safety stock.

**(2 marks)**

c) Assuming you decide to hold enough safety stock to cover 3 weeks worth of demand, calculate the revised Re-order Point for green widgets.

**(2 marks)**

d) Explain how a ‘Two Bin System’ might be used to simplify the replenishment of widgets and at the same time ensure against running out of stock. Explain why such a system would fit into an overall philosophy of Lean Manufacturing.

**(10 marks)**

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**Q 15**

**Using the information provided**

Complete the MRP Planning matrix for: Part No. 3-WH4220 / 40cm Wheel.

Use the blank MRP matrix, which is provided on a separate sheet.

Remember to put your name on your completed MRP matrix and attach this sheet to your answer booklet.

**Relevant information**

Your company manufactures two models of toy wagon:

- Model 0-1000, which is a 1-man wagon.
- Model 0-4000, which is a 2- man wagon.

Below is the **Master Production Schedule** for wagon production for the next 8 weeks.

- Right now it is Week 0.
- The company shuts down for routine maintenance and holidays for Week 5 to 7 and resumes production in Week 8.

<b><u>MPS</u></b>	<b>Weeks</b>								
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>Model 0-1000</b>		0	0	100	100	0	0	0	100
<b>Model 0-4000</b>		50	100	100	50	0	0	0	220

**The Bills of Materials** for each model are provided on **two separate sheets**, following this one in the exam booklet. Make sure you have both sheets before answering this question.

These are the **Planning Parameters** and **Inventory Data** for the component part number: **3-WH4220**, which is a 40cm wheel.

<b>3-WH4220</b>	
Planning Parameters	Re-Order Quantity      100 Lead Time                 2 weeks
Inventory Data	Stock On Hand         360 Scheduled Receipt      220 in Week 8

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	Weeks								
	0	1	2	3	4	5	6	7	8
<b>Gross Requirement</b>						0	0	0	
<b>Scheduled Receipts</b>									
<b>Projected Available</b>	360					60	60	60	
<b>Net Requirement</b>									
<b>Planned Order</b>									
<b>Planned Order</b>									

**End of Section 2.**

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Once you have completed the paper you may wish to see an outline marking scheme. This is available from the website at

[www.iomnet.org.uk//Learning-Resource-Centre/Distance-Learning/ROME/Markscheme.aspx](http://www.iomnet.org.uk//Learning-Resource-Centre/Distance-Learning/ROME/Markscheme.aspx)

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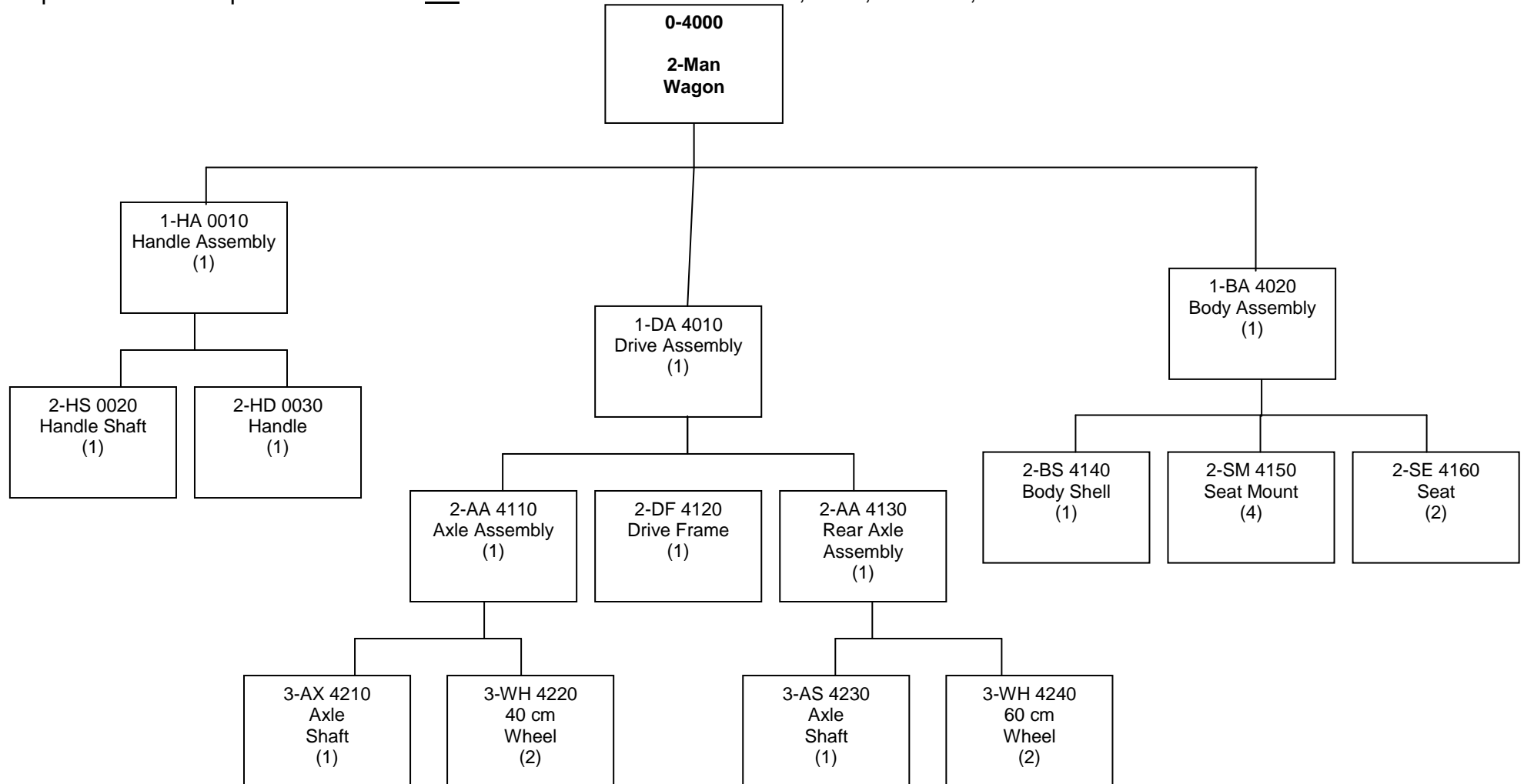
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	<b>Weeks</b>								
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>Gross Requirement</b>						0	0	0	
<b>Scheduled Receipts</b>									
<b>Projected Available</b>	360					60	60	60	
<b>Net Requirement</b>									
<b>Planned Order</b>									
<b>Planned Order</b>									

Q15

Bill of Materials for: 0-4000 Two Man Wagon

Important: This simplified BOM does not show small items such as nuts, bolts, washers, etc.



Q15

Bill of Materials for: 0-1000 One Man Wagon

Important: This simplified BOM does not show small items such as nuts, bolts, washers, etc.

