

NATIONAL UNIVERSITY OF IRELAND
GALWAY

SPRING
EXAMINATIONS
2002 - 2003

Computer Integrated Manufacturing (IE 423)
Integrated Manufacturing Systems (IE 557)

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Instructions: Time allowed: Three hours
Attempt Four Questions
All questions carry equal marks
Use diagrams to illustrate your answers
Use examples to reinforce your point

Question 1.

- (a) Traditionally manufacturing enterprises focused on automation and integration inside the four walls of the enterprise. Modern enterprises adopt a more customer focused business model. Discuss. (25 marks)

Question 2.

- (a) Outline an schematic model for manufacturing planning and control systems. Differentiate clearly between the strategic, tactical and operational planning levels. (7 marks)
- (b) Complete the following Materials Requirements Planning (MRP) matrix for item x. In what period should orders be released and what should be the size of those orders? (9 marks)
- (c) How would the planned order release change with no lot sizing and a safety stock of 20? (9 marks)

		Period								
Item: x	LLC: 1	PD	1	2	3	4	5	6	7	8
Lot Size Min 50	LT: 2									
Gross Requirements			20	30	50	50	60	90	40	60
Scheduled Receipts				50						
Projected on Hand		40								
Net Requirements										
Planned Order Receipts										
Planned Order Releases										

Question 3.

Provide (a) a concise definition and (b) list three associated benefits for each of the following: (5 marks each)

- (a) Group Technology
- (b) Production Flow Analysis (PFA)
- (c) Flexible Manufacturing System (FMS)
- (d) Cellular Manufacturing
- (e) Product Data Management (PDM)

Question 4.

- (a) Identify three resource recovery options (6 marks)
- (b) Discuss the complicating characteristics within production planning and control (PPC) for resource recovery (19 marks)

Question 5.

- (a) What is a flexible manufacturing System? Where is it used? (10 marks)
- (b) Describe four flexibility tests. (5 marks)
- (c) What is the difference between a Flexible Manufacturing Cell (FMC) and a Flexible Manufacturing System (FMS)? (5 marks)
- (d) What is the difference between a Dedicated FMS and a Random Order FMS? (5 marks)

Question 6.

- (a) "The Extended Enterprise is based on co-operation across the value and supply network". Discuss this statement paying particular attention to the benefits of enterprise integration. (15 marks)
- (b) What do you understand by the term "extended product"? How would you customise (or extend) a product? (10 marks)