NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY FACULTY OF INDUSTRIAL TECHNOLOGY DEPARTMENT OF INDUSTRIAL AND MANUFACTURING ENGINEERING BACHELOR IN ENGINEERING INDUSTRIAL AND MANUFACTURING ENGINEERING

2nd SEMESTER EXAMINATION – AUGUST 2009

Concurrent Engineering II - TIE 3219

Instructions to candidates

- 1. Time allowed 3hours
- 2. Answer any 4 Questions
- 3. All questions carry 25marks.

QUESTION 1

a)	Distinguish between Value Engineering and Value Analysis		
b)	Define the following terms		
	i) Value	[2]	
	ii) Customer perceived value	[3]	
	iii) Process value	[3]	
	iv) Company perceived value	[3]	
	v) Total value analysis	[3]	
c)	How can value of a product be increased?		
d)	Explain the 5 Why technique in value engineering		

QUESTION 2

a) Discuss the importance of following the sequence of events outlined below when designing products for Manufacturebility and assembleability. [20]



b) What are the important considerations if one is to choose the assembly method[5]

QUESTION 3

a)	Comment on each of the following DFA guidelines.				
	i)	Modularise multiple parts into single subassemblies.	[4]		
	ii)	Standardise to reduce part variety	[4]		
	iii)	Colour Code parts that are different but shaped similarly	[4]		
	iv)	Place fasteners away from obstructions; design-in fastener access	[4]		
	v)	Prefer easily handled parts.	[4]		
b)	What	is Hard automation and what are the design guidelines for this method	[5]		

QUESTION 4

a)	Explain how the Boothroyd-Dewhurst Method is used to assess products for	r
	assembleability	[20]
b)	Outline briefly the 3 main analysis in the Lucas Method for Assembleability	y
	Evaluation	[5]

QUESTION 5

Using examples of products of your choice, explain the following Design for "X-ability" Concepts.

Design for Compatibility.	[5]
Design for Green.	[5]
Design for Logistics.	[5]
Design for Manufacturability.	[5]
Design for Serviceability.	[5]
	Design for Compatibility. Design for Green. Design for Logistics. Design for Manufacturability. Design for Serviceability.

QUESTION 6

Using the Taguchi Quality Control methods explain the various stages of Quality Control that can deliver a robust product. [25]

END OF EXAM