UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2010/2011

COURSE NAME	:	CONCURRENT AND REVERSE ENGINEERING
COURSE CODE	:	BDD 4053
PROGRAMME	:	4 BDD
EXAMINATION DATE	:	NOVEMBER / DECEMBER 2010
DURATION	:	2 HOURS 30 MINUTES
INSTRUCTION	:	ANSWER **FOUR (4)** OUT OF SIX (6) QUESTIONS

THIS EXAMINATION PAPER CONTAINS FOUR (4) PAGES

Q1 a) Explain TEN (10) advantages of Concurrent Engineering which makes it a crucial tool for the survival of industrial businesses in a global competition.

(10 marks)

b) List and explain EIGHT (8) basic principles of Concurrent Engineering.

(10 marks)

c) How is it beneficial to bring together multidisciplinary team in a concurrent engineering effort?

(5 marks)

Q2 a) i. Define 'Robustness' in manufacturing and product design.

(3 marks)

ii. Describe FOUR (4) quality concepts devised by Taguchi.

(10 marks)

b) In Lean Manufacturing, what are the seven factors considered as wastes?

(7 marks)

c) List TEN (10) guidelines of Design for Manufacturing.

(5 marks)

Q3   a)   List SIX (6) criteria that need to be taken into consideration in selecting the right vendor.

(6 marks)

b)   What are the main reasons of maintaining a short-listed vendor list?

(4 marks)

c)   Elaborate on the current development of communication and networking technology which has contributed a lot to manufacturing competitiveness.

(5 marks)

d)   Why the Voice of Customer is incorporated into all phases of the product development cycle, through concept engineering and analysis, design, prototyping, production engineering and planning, management and control, manufacturing and finally into delivery and support?

(10 marks)

Q4   a)   List FIVE (5) benefits of Reverse Engineering.

(5 marks)

b)   What are the main goals of Reverse Engineering?

(5 marks)

c)   How do you measure the success of Reverse Engineering efforts?

(5 marks)

e)   Why would technical data development be conducted using Reverse Engineering after products have been produced?

(5 marks)

f)   How do you build quality into Reverse Engineering?

(5 marks)

Q5   a)   Differentiate between structured light and interferometry optical techniques.

(10 marks)

b)   Shading and screening are two problems related to light-based scanners. What are they? Assist your explanation by using sketches.

(5 marks)

c)   List the advantages of non-laser light as compared to laser light.

(5 marks)

d)   How is benchmarking executed for the purpose of vendor selection?

(5 marks)

Q6   a)   Explain how Reverse Engineering is applied for the quality control of a product.

(5 marks)

b)   i.   Compare the available methods of digitizing used in measuring the dimensions of a product.

(4 marks)

ii.   Name THREE (3) available measuring systems designed to non-destructively scan the internal parts of products or internal organs in medical applications.

(6 marks)

c)   Describe the FOUR (4) stages involved in the reverse engineering process.

(10 marks)