**U N I V E R S I T Y  O F  P O R T S M O U T H**

**FACULTY OF TECHNOLOGY**

**Department of Electronic and Computer Engineering**

# M528 – Electronics Manufacturing

**U09167B**

**Date: 4 June 2007** **Time: 2 hours**

**INSTRUCTIONS**

Write your student ID number clearly on page 2.

Write your answers to all 5 questions in this examination paper.

For each question, indicate your answer to **part A** by placing an "X" in the box next to the appropriate boxes on the answer sheet. For each question, write your answer to **part B** by writing in the appropriate space in this examination paper.

Handwritten notes are permitted with this examination.

**Calculators permitted are:**

Casio FX 85WA

Casio FX 83WA

Casio FX 85MS

**Examiner:**

Mr Chi Nguyen

Student ID Number

**Question 1A.** Place an "X" in the box next to 5 terms that are important developments in the historical context of the electronics manufacturing industry. [5 marks]

| | | | |
|---|---|---|---|
| | business model | | cost of manufacture |
| | division of labor | | bullwhip effect |
| | time value of money | | interchangeable parts |
| | company stock | | assembly line |
| | prime cost | | transfer pricing |
| | monolithic production | | data warehouse |

**Question 1B.** Use all of the terms you selected in question 1A to describe how they affect key activities and/or areas of the modern electronics manufacturing industry. [15 marks]

**Question 2A.** Place an "X" in the box next to 5 terms that are most directly related to the fabrication of silicon wafers. [5 marks]

| | | | |
|---|---|---|---|
| | spindles | | silicon isolation |
| | acceptors | | crystal reduction |
| | donors | | transplants |
| | crystal growth | | receptors |
| | silicon condensation | | ingots |
| | premium bonding | | monochrome |

**Question 2B.** Use all of the terms you selected in question 2A to describe key activities in the fabrication of silicon wafers. [15 marks]

**Question 3A.** Place an "X" in the box next to 5 terms that are most directly related to factors that affect the design of supply chains in the electronics industry. [5 marks]

| | | | |
|---|---|---|---|
| | stock | | yield specialisation |
| | standards | | design repositories |
| | merchandising | | prototyping |
| | demand aggregation | | information |
| | virtual inventory | | matrix |
| | risk specialisation | | silos |

**Question 3B.** Use all of the terms you selected in question 3A to describe how businesses in the electronics industry use their supply chain to support 3 different strategic objectives of cost, flexibility and service. Use a different company to illustrate each strategic objective. [15 marks]

**Question 4A.** Place an "X" in the box next to 5 terms that are most directly related to design principles that apply to electronics products. [5 marks]

| | | | |
|---|---|---|---|
| | functional content | | interlocking |
| | tolerance level | | freedom |
| | accelerate | | customisation steps |
| | independence | | fitness for quality |
| | information content | | functional requirements |
| | assembly steps | | delay |

**Question 4B.** Use all of the terms you selected in question 4A to describe 3 design principles and 1 specific product example to illustrate each principle. [15 marks]

**Question 5A.** Place an "X" in the box next to 5 terms that are elements used in conceptual models for describing and comparing businesses. [5 marks]

| | | | |
|---|---|---|---|
| | employees | | relationships |
| | marketing | | capabilities |
| | sourcing | | channels |
| | ownership | | integration |
| | coordination | | valuation |
| | distribution | | procurement |

**Question 5B.** Use all of the terms you selected in question 5A to compare the business model of 3 companies who compete against each other in the electronics industry. [15 marks]