PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Final-term Examination: Semester II   Academic Year: 2010

Date: March 3, 2011   Time: 13:30-16:30.

Subject: 225-503 Production Systems & Management   Room: S817

Instructions

- There are 4 questions in 3 pages (include this cover page)
- Answer all 4 questions in the **answer**-book provided
- <u>Open-book exam.</u> All materials, books, papers, calculators and dictionaries are allowed.
- Total score is 90

Questions	Full Score	Assigned Score
Q1	20	
Q2	20	
Q3	30	
Q4	20	
Total	**90**	

Assoc. Prof. Somchai Chuchom

ทุจริตในการสอบ โทษขั้นต่ำคือ ปรับตกในรายวิชาที่ทุจริต และพักการเรียน 1 ภาคการศึกษา

Question 1 (20 marks)

According to the plant visit during the course;

1-1) Select **only one** plant and explain in details the operation and control of the production line. Specify the tools and/or technologies applied in the line.

1-2) Compare those factories visited in any aspects according to information collected during the trip.

Question 2 (20 marks)

2-1) How is a pull system distinguished from a push system in production and inventory control?

2-2) Explain the concepts of the TPS (Toyota Production System) and show the details of tools or sub-systems that support the implementation of TPS successfully.

Question 3 (30 marks)

3-1) A product is produced in batches. Batch size is 2,000 units. Annual demand is 50,000 units, and the unit cost of production is $4.00. Set up time to run a batch is 2.5 hrs, cost of downtime on affected equipment is figured at $250/hr, and the annual holding cost rate is 30%. What would the annual saving economic order quantity?

3-2) What is the simplex method? What kinds of problems most be beneficial by applying simplex method?

3-3) Solve the following problem by simplex method;

Maximize : $Z = 3x_1 + 2x_2$

Subject to :
$$-x_1 + 2x_2 \leq 4$$
$$3x_1 + 2x_2 \leq 14$$
$$x_1 - x_2 \leq 3$$
$$x_1, x_2 \geq 0$$

Question 4 (20 marks)

Choose **only one** topic from the list below and explain in details on the selected topic to show that it is a useful tool for decision making in management system for manufacturing, and discuss on the reviewed papers or related work if possible. The lists of topics are:

4-1) Production Scheduling (PERT/CPM)

4-2) Inventory Management (EOQ)

4-3) Quality Engineering (QC, TQC/TQM, QFD)

4-4) Production Planning (MRP/CRP, Forecasting)

4-5) Production Control (TPM)