

**PRINCE OF SONGKLA UNIVERSITY**  
**FACULTY OF ENGINEERING**

Final-term Examination: Semester II

Academic Year: 2012

Date: March 1, 2013

Time: 13:30-16:30.

Subject: 225-503 Production Systems & Management

Room: R201

**Instructions**

- There are 4 questions in 3 pages (include this cover page)
- Answer all 4 questions in the **answer**-book provided
- Open-book exam. 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	
<b>Total</b>	<b>90</b>	

Assoc. Prof. Somchai Chuchom

ทฤษฎีในการสอบ โทษขั้นต่ำคือ ปรับตกในรายวิชาที่ทฤษฎี และพักการเรียน 1 ภาคการศึกษา



**Question 1 (20 marks)**

According to the plant visit during the course;

- 1-1) Explain the production processes and production control applied at Allied-Tek Engineering plant.
- 1-2) Compare those factories visited in any aspects according to information collected during the trip.

**Question 2 (20 marks)**

Use all the given terms or phrases below to explain the concepts of the TPS (Toyota Production System) and show in details the success implementation of TPS.

- a) Autonomation
- b) Andon
- c) Production smoothing
- d) Pull system
- e) Visual control
- f) Creative thinking
- g) Kanban
- h) Pokayoke
- i) Continuous flow of production
- j) Just in time
- k) Standardization of operations
- l) Improvement activities
- m) Flexible work-force
- n) Quality control circles
- o) Function management
- p) Reduction of setup time
- q) Machine layout and multi-function worker



**Question 3** (30 marks)

- 3-1) What is the simplex method? What kinds of problems most be beneficial by applying simplex method?
- 3-2) When producing two kinds of products,  $P_1$  and  $P_2$ , in a specified production period, raw material required are 4 and 10 kg, labor 5 and 7 hours, and production facilities 16 and 5 units, respectively, for producing each unit of  $P_1$  and  $P_2$ . A unit of product  $P_1$  creates a profit of \$4, and product  $P_2$  of \$10. Given that available production resources are limited, such as 40 kg for raw materials, 35 man-hours for labor, and 80 units for production facilities.
- 3-2a) Formulate the production planning for total profit maximization (using linear programming model)
- 3-2b) Solve the problem by simplex method;

**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) Profit Planning and Break-even Analysis
- 4-2) Inventory Management (EOQ)
- 4-3) Quality Engineering (QC, TQC/TQM, QFD)
- 4-4) Production Control (TPM)
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