PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Final Examination : Semester II	Academic Year : 2006
Date : February 22, 2007.	Time : 09:00-12:00
Subject : 225-348 Quality Control	Room : R300

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ทุจริตในการสอบ โทษขั้นต่ำปรับตกในรายวิชานั้น

และพักการเรียน 1 ภาคการศึกษา

Instructions :

1. There are 5 questions, 100 points.
2. Attempt all questions.
3. Books and notes, dictionary and calculator are allowed.
4. Borrowing things from other students is prohibited.

Problem no.	Full Score	Score
1	15	
2	15	
3	15	
4	15	
5	40	
Total	100	

Assoc. Prof. Dr. Sunchai Klinpikul
Instructor

1. The number of defects found on final inspection of a refrigerator is shown below.

    a. Establish a proper control chart at 3 – sigma control limit.   (5 points)

    b. Can you conclude that the process is in statistical control ?   (5 points)

    c. What is the probability that the defects found on the refrigerator no.19 inspected will be out of control ?   (5 points)

Refrigerator no.	No. of Defects	Refrigerator no.	No. of Defects
1	0	11	0
2	1	12	3
3	1	13	2
4	0	14	5
5	2	15	1
6	1	16	2
7	1	17	1
8	3	18	1
9	2		
10	1		

2. A double sampling plan for a QC inspection point in the production line is :

$$N \quad = \quad 15{,}000$$
$$n_1 \quad = \quad 100 \qquad c_1 \quad = \quad 0$$
$$n_2 \quad = \quad 100 \qquad c_2 \quad = \quad 1$$

(a) Find the probability of accepting the lot if the process average is 2 % defective.

(10 points)

(b) If this plan is a rectified double sampling plan what is the average outgoing quality and what is the average number inspected per lot ?

(5 points)

3. An inspector for a military agency desires a variable sampling plan for use with AQL = 0.85, assuming that lots are of size 2,000. The specification of the products is [200 $\pm$ 10] and the standard deviation is unknown.

Determine a proper variable sampling plan for this agency using general inspection.

(15 points)

4. A shipping company is going to buy at least 500 units of mercury lamps to install in the ship yard. The required average life time of the lamps should be 1,000 hours with a probability of acceptance of 95% and the company would reject the lamps with an average life time of 700 hours with a probability of 90%.

What should be a proper life test plan of the company ?   (15   points)

5. **Answer the following questions. (40 points)**

    (1) Independency of a system   **(3 points)**

    (2) What did you learn from the Red bead game.   **(3 points)**

    (3) Explain briefly about the cross function management.   **(3 points)**

(4) What is SWOT Analysis ? Why do we have to use this technique in TQM ?

$\qquad$ (3 points)

(5) What is Balanced Score Cards ? How can we use BSC in an organization ?

$\qquad$ (4 points)

(6) What is the advantage of using BSC and KPI System in annual employee's evaluation in comparing with the subjective rating ?

$\qquad$ (4 points)

(7) Explain the procedure steps for safety management in a manufacturing company in accordance with the regulations of the Ministry of Labor.

(5 points)

(8) List the new QC tools used in QC story. (5 points)

(9) What is the significant changes in ISO 9000 : 2000 in comparing with the ISO9000 : 1994 ?

(5 points)

(10) List the name of the companies received TQA and TQC awards during 2002-2004.

(5 points)