

PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Final Examination : Semester II**Academic Year :** 2005**Date :** February 25, 2006.**Time :** 09.00 – 12.00**Subject :** 225-348 Quality Control**Room :** R200

ทูลรลทในการสอบ โทษจันด้าปรลบกในรายวชานัน
และพัทการเรยน 1 ภาคการศึกษา

Instruction :

1. There are 6 questions, 100 points.
2. Books and notes are allowed.
3. A calculator and a dictionary are allowed.
4. Borrowing things from other students is prohibited.

Problem	Full Score	Score
1	10	
2	15	
3	10	
4	20	
5	15	
6	30	
Total	100	

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Instructors



1. An \bar{X} chart is used to control the mean of a normally distributed quality characteristic. It is known that the standard deviation is 6.0 and sample size = 4. The center line = 200 , UCL = 209 and LCL = 191.

If the process mean shifts to 188, find the probability that this shift is detected on the first subsequent sample.

(10 points)



2. A Process that produces bearing housing is controlled with a fraction defective chart, using sample size $n=100$ and a center line of 0.02.

(a) Find the 3-sigma limits for this chart. (5 points)

(b) Analyze the ten new samples ($n = 100$) shown below for statistical control. What conclusions can you draw about the process now?

(10 points)

Sample no.	1	2	3	4	5	6	7	8	9	10
No. of NC.	5	2	3	8	4	1	2	6	3	4



3. Given a double sampling plan : $n_1 = 20$, $n_2 = 40$, $c_1 = 0$, $c_2 = 2$, $\alpha = 0.05$ and $\beta = 0.10$.

Determine AQL and LTPD for this sampling plan. (10 points)



4. A small company producing electric devices orders plastic boards as raw material with the minimum density at 0.7 grams per square centimeters. The quality control department had established quality criteria as follows :

- AQL lot has a fraction defective of 2%
- RQL lot has a fraction defective of 10%

The standard deviation of the density of plastic board is not known. Use producer risk = 0.10 and consumer risk = 0.05.

(a) Determine an inspection sampling plan of the company.
(10 points)

(b) Suppose QC staff takes random sampling from a lot size with a sample mean of 0.73 grams per square centimeters and a sample standard deviation of 0.0105, this lot should be accepted or rejected ?
(10 points)



5. Formulate your vision, goals, SWOT analysis, strategies and time frame to achieve your successful of your worklife after you graduate from this university.

(15 points)

VISION :

GOALS FOR YOUR LIFE :

SWOT ANALYSIS :

STRATEGIES :



TIME FRAME

GOALS TO BE ACHIEVED	YEAR (BE.)			
	2551.....2560	2561.....2570	2571.....2580	2551.....2600



6. Answer the following questions (30 points)

(1) New QC tools consist of : (3 points)

(2) List the criteria for National Quality Award and scores for each criteria. (3 points)

(3) What are major perspectives in Balance Score Card. Explain briefly about each perspective. (3 points)



(4) Document structure for ISO 9000 consists of : (3 points)

(5) What are major concepts which you had learnt from Profound Knowledge provided by Dr. E. Deming ? (3 points)

(6) What is cross function management ? Why does the TQM organization have to use cross function management approach ? Give some examples . (3 points)



(7) Explain about top-down management in TQM. (3 points)

(8) Derive the subsequent steps to evaluate the departments and employees using BSC and KPI approach. (3 points)



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- (9) Draw a process-based quality management diagram of ISO 9000:2000 to illustrate the functions and relationships of 4 core elements. (3 points)**

- (10) List the 8 principles of quality management system including in ISO 9000 : 2000. (3 points)**

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