



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
SEPTEMBER 2014 SESSION

SUBJECT CODE : FIB46203
SUBJECT TITLE : QUALITY MANAGEMENT
LEVEL : BACHELOR
TIME / DURATION : 9.00 AM – 11.00 AM
(2 HOURS)
DATE : 30 DECEMBER 2014

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper **CAREFULLY**.
2. This question paper is printed on both sides of the paper.
3. Please write your answers on the answer booklet provided.
4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
5. This question paper consists of **TWO (2)** sections. Section A and B. Answer all questions in Section A. For Section B, answer three (3) questions only.
6. Answer all questions in English.
7. FMEA Form is appended.
8. Graph paper is appended.

THERE ARE 7 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****Question 1**

- a. List two (2) of the TQM principles and briefly explain why it is important. (3 marks)
- b. List of the two (2) benefit of implementing six-sigma (4 marks)

Question 2

Answer the following questions.

- a. Differentiate between Manufacturing and Service in terms of quality management. (4 marks)
- b. Explain five (5) dimensions of Quality in manufacturing and five (5) different dimensions of Quality in services sectors. (10 marks)

Question 3

The 5-star hotel located at Bandar Baru Bangi having a problem where the sale is going down tremendously in last two (2) years. The director of the Hotel has decided to hire a consultant to analyze the problem.

- a. As the consultant, draw a fishbone diagram for the causes of these problems. (5 marks)
- b. Provide some solutions and action plans to improve the situation. (5 marks)

Question 4

Specifications for the density of product is 3.5 ± 1.5 . (The unit of measure is grams per centimeter², or g/cm².) A random sample of 100 pieces of the product was selected and the density of each piece in the sample was recorded. The sample average was equal to 3.6 and the sample standard deviation was equal to 0.75. A histogram of the sample data is shown in Figure 1 below.

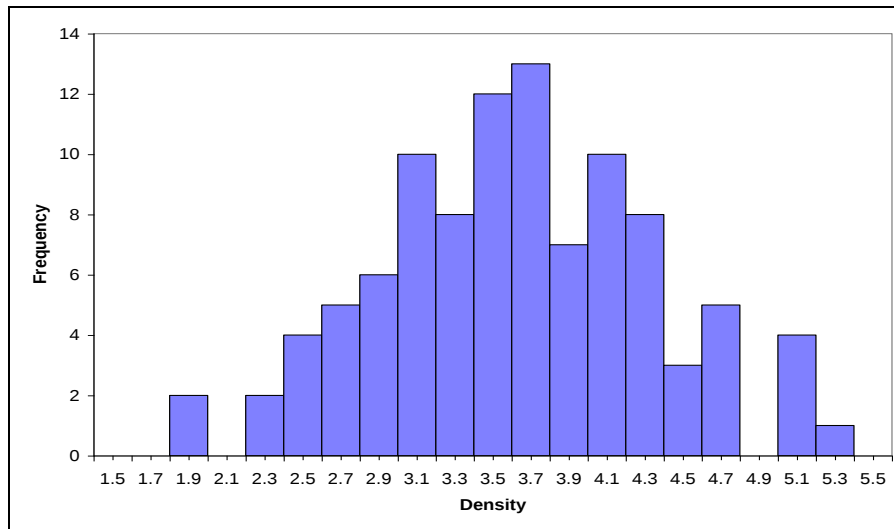


Figure 1: Histogram density of product

Based on the Histogram in Figure 1, answer the following questions;

- How many pieces of chalk in the sample are considered defective (NOT within the specifications)?
(3 marks)
- Based on your response to the question (a), what is the defect per million opportunity (dpmo) value for this process?
(3 marks)
- According to the concepts of Six-Sigma Quality, what is the quality level for this process?
(4 marks)

SECTION B (Total: 60 marks)

INSTRUCTION: Answer only THREE (3) questions. Please use the answer booklet provided.

Question 5

Analysis of customer complaints at *UniKL Logistics Sdn. Bhd.* revealed errors in ten (10) categories. Data is provided in Table 2 below.

Table 2: Customer Complaint Data.

Type of Errors	Frequency
Billing errors	860
Cheating	100
Shipping errors	3628
Others	80
Electronic charge errors	530
Long delays	5793
Delivery errors	641
Mailing errors	58
Phone Call error	40
Miss Communication	20
Total	11750

- a. Construct a Pareto diagram for these data. (12 marks)
- b. What conclusions can you say about the defects at this company? (4marks)
- c. Provide some solutions and action plans to improve the situation. (4 marks)

Question 6

Parts manufactured by an injection molding process are subjected to a compressive strength test. 100 samples are collected from the 20 consecutive working days, and the number of defective part(s) is/are shown in Table 3.

Table 3: Daily Defective Part(s)

Day	Defective unit(s)
1	1
2	1
3	1
4	3
5	4
6	2
7	3
8	2
9	1
10	3
11	3
12	1
13	2
14	1
15	2
16	1
17	2
18	2
19	1
20	1

Based on the data given in the Table 3, answer all these questions.

- Compute center lines and control limits for p-control chart. (6 marks)
- Plot p-control charts. (4 marks)
- Is the process in statistical controlled? Justify your answer. (2 marks)
- Using the same data, construct np-control charts. (6 marks)
- What you can conclude from the both charts? (2 marks)

Question 7

A company makes the glass-tables to supply for the Kementerian Pendidikan Malaysia. The specification of the table width is 100 cm. The manager wants to check either the cutting process is in controlled or not. He decided to plot x- MR control chart from the data collected below as shown in the following Table 4.

Table 4: Width of the table (cm).

Sample number	Table's Width	Sample number	Table's Width	Sample number	Table's Width	Sample number	Table's Width
1	99	7	100	13	99	19	101
2	101	8	99	14	100	20	99
3	100	9	101	15	101	21	98
4	102	10	100	16	98	22	100
5	98	11	103	17	102	23	101
6	101	12	102	18	98	24	99

Based on the data given in the Table 4, answer all these questions.

- Develop x and MR-control charts from the given data.
(12 marks)
- Would you conclude that the process is under control? Justify your answer.
(2 marks)
- What comment do you have regarding the quality performance of this company?
(2 marks)
- Provide some advices what should be done in order to improve the quality at this company.
(4 marks)

Question 8

Failure Mode and Effect Analysis (FMEA) is an analytical technique that combines the technology and experience of people in identifying foreseeable failures modes of a product or process and planning for its elimination. FMEA activities include recognizing and evaluating the potential failure of a product or process and its effects, then identifying the actions that could eliminate or reduce the chance of potential failures.

You are working at the AutoCool (M) Sdn. Bhd. as a Production Engineer. One of the company's products is Ceiling Fan model AutoCool 5XA. Last month you received 99 customer complaints where the fans were rotate in reverse direction. Perform Process FMEA to anticipate what you could do to eliminate potential problems. (Write your answer in the **Process FMEA Form** given in Appendix 1. by identifying at least five (5) possible potential causes)

(20 marks)

END OF QUESTION

Failure Modes & Effects Analysis

Process/Product: _____						FMEA Date: (original) _____									
FMEA Team: _____						(Revised) _____									
Black Belt: _____						Page: _____ of _____									
Process						Actions				Results					
Item Process Steps	Potential Failure Mode	Potential Effects of Failure	Severity	Potential Cause(s) of Failure	Occurrence	Current Controls	Detection	Risk Priority Number	Recommended Action	Responsibility and Target Completion Date	Action Taken	Severity	Occurrence	Detection	Risk Priority Number
Total Risk Priority:									Resulting Risk Priority						

Appendix 1