



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
JANUARY 2011 SESSION**

SUBJECT CODE : FID26102
SUBJECT TITLE : INDUSTRIAL MANAGEMENT
LEVEL : DIPLOMA
TIME / DURATION : 8.00pm – 10.00pm
(2 HOURS)
DATE : 09 MAY 2011

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 two (2) question only.
 6. Answer all questions in English.
 7. Graph paper is appended.
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THERE ARE 6 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)

INSTRUCTION: Answer ALL questions.
Please use the answer booklet provided.

Question 1

- (a) List and explain **three (3)** maintenance goals. (6 marks)
- (b) Illustrate Life cycle of Equipment in Terotechnology. (4 marks)

Question 2

- (a) Saturn Engineering is a manufacturer of airplane. In order to demonstrate the reliability of its product, routine maintenance was performed. Table 1 below gives the number of miles flying before breakdown for cars that received this normal servicing.

Table 1: Failure Data

Number of Units	Hours to Failure
2	2000
3	5500
6	3000
5	2500

Based on Table 1, determine

- (i) Failure rate, λ (5 marks)
- (ii) Mean life, μ (2 marks)

- (b) Failure is termination of the ability of an item to perform its required function.
Identify **three (3)** sources of failure.

(3marks)

Question 3

- (a) Explain **four (4)** elements of Reliability.

(4 marks)

- (b) A smart tag produced by the Osaka Tech is known to have a reliability of 0.847 for 72000 hours of operation. What is the failure rate for this smart tag.

(6 marks)

Question 4

- (a) Define in your own words for the following:

- i. Quality
- ii. Quality Control
- iii. Quality Assurance

(6 marks)

- (b) State what will happen to Quality, when

- i. Cost is Decrease
- ii. Productivity is Increase
- iii. Market Share is Increase
- iv. Customer Satisfaction is Decrease

(4 marks)

Question 5

- (a) There are **seven (7)** basic QC Tools. Explain and illustrate any two (2) of them.
(6 marks)
- (b) Brainstorming is a technique used to help with the difficult task of managing the views of a large group of people. Explain how to make an effective "brainstorming".
(4 marks)

Question 6

- (a) Zipen Engineering manufactures digital camera. Construct a Fishbone Diagram for a quality problem "Wrong Solder " by using 4M's
(4 marks)
- (b) Illustrate and explain about Radar Chart and Tally sheets
(6 marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer only TWO questions.

Please use the answer booklet provided.

Question 7

- (a) The mean times between failure for three components are shown in Table 1 below. The component will be arranged in a parallel configuration. What will be the system reliability for 20 hours operation?

Table 1: Mean time between failure for each component.

Component	MTBF
Capacitor	100
Transistor	200
Resistor	300

(10marks)

- (b) Determine the reliability of the process below.

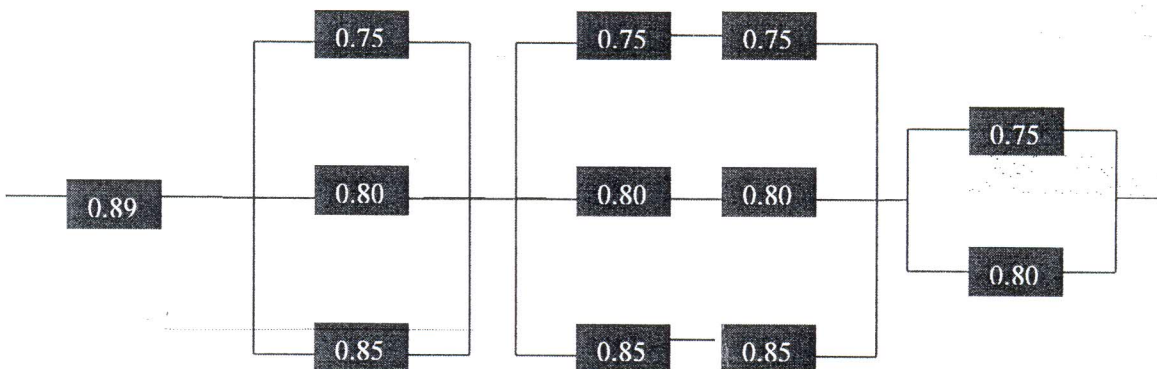


Figure 1: Reliability Block Diagram

(10marks)

Question 8

A small electronic device is designed to emit a timing signal of 10 milliseconds (ms). During the production of this device, subgroups of five units are taken and tested at periodic intervals. The results of inspection are shown in Table 2 below. Constant for X bar and R Chart is given in Table 3.

Table 2 : Duration of automatic signal

Number of subgroup	Sample device				
	x1	x2	x3	x4	x5
1	204	190	199	199	198
2	211	198	198	196	190
3	200	202	206	200	199
4	201	197	196	199	197
5	203	201	209	205	220
6	193	203	197	210	250

Table 3: Constant for X bar and R Chart

Sample Size <i>n</i>	X bar Chart A2	R Chart	
		D3	D4
3	1.023	0	2.574
4	0.729	0	2.282
5	0.577	0.076	2.114
6	0.483	0.136	1.924
7	0.419	0.187	1.684

- (i) Calculate X bar and R for each subgroup (4 marks)
- (ii) Plot the X-bar chart (7 marks)
- (iii) Plot R Chart (6 marks)
- (iv) Analyze the control chart and give comment. (3 marks)

Question 9

- (a) Prepare a histogram for data in Table 4 (15 marks)
- (b) Analyze the histogram and state your explanation (5 marks)

Table 4: Time for preparing a Pizza

Date	Time			
	900	1100	1400	1600
1	77.84	78.04	78.08	77.90
2	78.18	78.16	78.12	78.10
3	78.10	78.28	78.14	78.04
4	78.16	78.12	77.98	78.12
5	78.30	78.20	78.08	78.18
6	78.08	78.00	77.88	78.04
7	78.26	78.20	78.14	78.16
8	77.96	78.00	77.92	78.06
9	78.24	78.14	78.04	78.12
10	78.10	78.48	78.10	78.46
11	78.32	77.96	78.20	77.98

END OF QUESTION