



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
JANUARY 2013 SESSION**

SUBJECT CODE : FID 26102
SUBJECT TITLE : INDUSTRIAL MANAGEMENT
LEVEL : DIPLOMA
TIME / DURATION :
(2 HOURS)
DATE :

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) questions only.
 6. Answer all questions in English.
 7. Graph paper is appended.
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THERE ARE 5 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)**INSTRUCTION: Answer all questions.****Please use the answer booklet provided.****Question 1**List **four (4)** basic maintenance activities.

(4 marks)

Question 2Give **three (3)** reasons why maintenance needs to function effectively in plant.

(6 marks)

Question 3

Define the following:

(a) Mean Down Time (MDT)

(2.5 marks)

(b) Mean Time To Repair (MTTR)

(2.5 marks)

(c) Mean Time Between Failure (MTBF)

(2.5 marks)

(d) Availability

(2.5 marks)

Question 4There are some challenges facing by the modern maintenance managers these days. List **four (4)** challenges that they might face.

(10 marks)

Question 5

Name **four (4)** types cost of quality (COQ).

(4 marks)

Question 6

Explain how quality of product can increase the company's profit?

(4 marks)

Question 7

Define and illustrate the following quality tool techniques:

(a) Scatter diagram

(5 marks)

(a) Pareto Diagram

(5 marks)

Question 8

Describe the objectives to have the following:

(a) Quality Assurance

(6 marks)

(b) Quality Control.

(6 marks)

SECTION B (Total: 40 marks)**INSTRUCTION: Answer two (2) questions only.****Please use the answer booklet provided.****Question 9**

A small electronic device is designed to emit a timing signal of 200 milliseconds (ms). In the production of this device, subgroups of five units are taken at periodic intervals and tested. The results of inspection of 10 of these devices are shown in Table 1 below.

Table 1: Duration of automatic signal of the electronic devices

Sub group number	Duration of automatic signal, ms				
	Sample letter				
	A	B	c	d	e
1	204	190	199	195	202
2	211	198	193	199	204
3	200	202	195	200	197
4	201	197	206	207	197
5	203	201	209	192	198
6	193	203	197	198	201
7	199	199	197	204	202
8	198	196	199	205	197
9	206	200	190	202	196
10	196	199	197	198	204

Calculate the following:

a) \bar{X} and R for each subgroup (6 marks)

b) Plot the \bar{X} chart (7 marks)

c) Plot R chart (7 marks)

Note: refer to Table 2 for Table of Constant

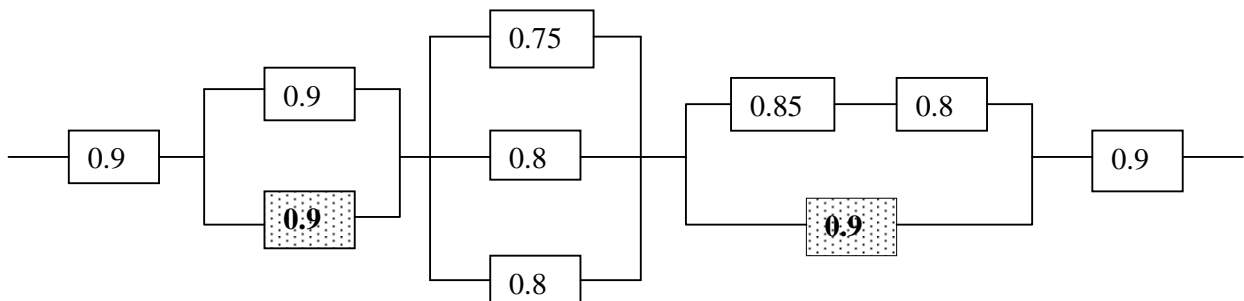
Table 2: Constants for the \bar{X} and R chart


Sample size n	\bar{X} Chart A2	R Chart	
		D3	D4
3	1.023	0	2.574
4	0.729	0	2.282
5	0.577	0	2.114
6	0.483	0	2.004
7	0.419	0.076	1.924
8	0.373	0.136	1.864
9	0.337	0.184	1.816
10	0.308	0.223	1.777

Question 10

The overall process had to undergo various types of system that describe below.

Determine the reliability of the process?



Standby unit 

(20 marks)

Question 11

Table 3 below shows a breakdown data of machine X of manufacturing company which produces electronic components. The company works 5 days per week with 16 hours operation per day.

Table 3: Machine X breakdown data

April			May			June		
Week	Time Minutes/ Week	No of break down	Week	Time Minutes/ Week	No of break down	Week	Time Minutes/ Week	No of break down
WK1	90	3	WK1	135	1	WK1	120	1
WK2	100	1	WK2	140	2	WK2	110	3
WK3	130	1	WK3	115	1	WK3	160	4
WK4	240	2	WK4	130	2	WK4	140	2

From the given data, calculate for machine 'X':-

- a) Mean Time between Failure (MTBF) (10 marks)
- b) Availability (5 marks)
- c) Based on the answer of (a) and (b), what conclusion can you give on machine X performance? (5 marks)

END OF QUESTION