UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF INDUSTRIAL TECHNOLOGY

FINAL EXAMINATION

JANUARY 2016 SEMESTER

COURSE CODE	:	JQD 31503
COURSE TITLE	:	INTRODUCTION TO QUALITY AND RELIABILITY MAINTENANCE
PROGRAMME LEVEL	:	DIPLOMA
DATE	:	19 MAY 2016
TIME	:	9.00 AM – 12.00 PM
DURATION	:	3 HOURS

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. This question paper consists of TWO (2) sections.
4. Answer ALL question in Section A. Choose TWO (2) questions in Section B.
5. Please write your answers on the answer booklet provided.
6. Please answer all questions in English only.

THERE ARE 3 PAGES OF QUESTIONS EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)

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

Question 1

The customer in the 21st century will make buying decision not only based on the price and quality, but also on the reliability of the product. Reliability is increasingly becoming important, as our daily lives and schedules are more dependent than ever before on the satisfactory functioning of the engineering systems.

(a) Describe the benefits gained by improving product reliability.

(10 marks)

(b) Describe the relationship between Quality and Reliability by providing **TWO (2)** examples from either daily activity.

(10 marks)

Question 2

Durian (M) Sdn. Bhd is in the process of developing new gadget, the new generation of Ni-Pad in order to compete against the popular iPad by Apple Corporation, USA. The product will be released in the middle of June 2016. Imagine as if you are one of the key technical staff involved in the project.

(a) Describe **FOUR (4)** types in Product Testing that are relevant to T-Pad.

(10 marks)

(b) Define **FIVE (5)** possible problem on the T-Pad when purchased by the customer.

(10 marks)

Question 3

Reliability evaluation is an important activity to ensure the reliability of engineering products. Over the years, many reliability evaluation methods and techniques have been developed. Inappropriate reliability evaluation will cause failure on the products.

(a) Differentiate between the minor and major failure of the products by giving **TWO (2)** examples for EACH failure.

(10 marks)

(b) Describe **FIVE (5)** external barriers in implementing the reliability methods and techniques.

(10 marks)

SECTION B (Total : 40 marks)

INSTRUCTION : Answer TWO (2) questions
Please use the answer booklet provided.

Question 1

There are a few reasons on how product fails in either in the manufacturing processes or in the hand of customers.

a. Describe the **FIVE (5)** reasons of product fails by providing a details explanation and example for each failure.

(10 marks)

b. Describe **FIVE (5)** internal barriers in implementing the reliability methods and techniques.

(10 marks)

Question 2

A systematic maintenance approach is one of the key to support the successful of quality initiatives in the manufacturing plant such as (1) Lean Manufacturing; (2) Just in Time (JIT) and (3) Six Sigma approach. A Total Productive Maintenance (TPM) is one of the systematic maintenance approach that been developed by Japan Institute of Plant Maintenance (JPIM) in 1988.

a. Describe **FIVE (5)** elements that encompasses in a comprehensive definition of TPM.

(10 marks)

b. Discuss the **FIVE (5)** of expected benefits from TPM implementation.

(10 marks)

Question 3

TPM initiative involves eight (8) pillars implementation plan. One of the significant pillars in TPM is Autonomous Maintenance (AM).

(a) AM focuses on the elimination of the 'SIX big losses' that are formidable obstacles to equipment effectiveness. Explain THREE (3) of these losses.

(10 marks)

(b) Describe **FIVE (5)** of the Critical Success Factors (CSFs) in implementing the TPM methodology.

(10 marks)

END OF EXAMINATION PAPER