

**UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF INDUSTRIAL TECHNOLOGY**

**FINAL EXAMINATION
JANUARY 2016 SEMESTER**

SUBJECT CODE : JQB 30803
SUBJECT TITLE : QUALITY RELIABILITY AND MAINTENANCE
LEVEL : BACHELOR
DATE : 19th MAY 2016
TIME : 2.30PM- 5.30PM
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. Answer only **FOUR (4)** questions.
 4. Please write your answers on the answer booklet provided.
 5. Please answer all questions only in English language.
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THERE ARE 4 PAGES OF QUESTIONS EXCLUDING THIS PAGE

INSTRUCTION: Choose FOUR (4) questions only
Please use the answer booklet provided

Question 1

There are two classifications of factors that affecting reliability. Temperature, humidity, chemical corrosion and vibration effect are one of the groups of factor's classification.

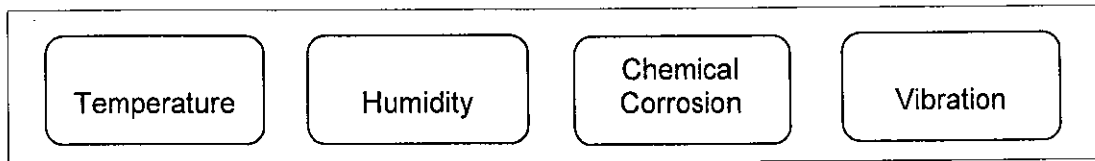


Figure 1: Factors affecting reliability

- (a) Identify the factor that affecting reliability. (2 marks)
- (b) Evaluate any **TWO (2)** factors that affecting the reliability based on the Figure 1 above and suggest the way to prevent the caused. Provide proper examples in your explanation. (8 marks)
- (c) Elaborate thoroughly the following : (10 marks)
- a. Types of failure
 - b. Degree of failure
 - c. Failure behavior
- (d) State **FIVE (5)** importance of reliability in industry, but not limited to manufacturing industry. (5 marks)

Question 2

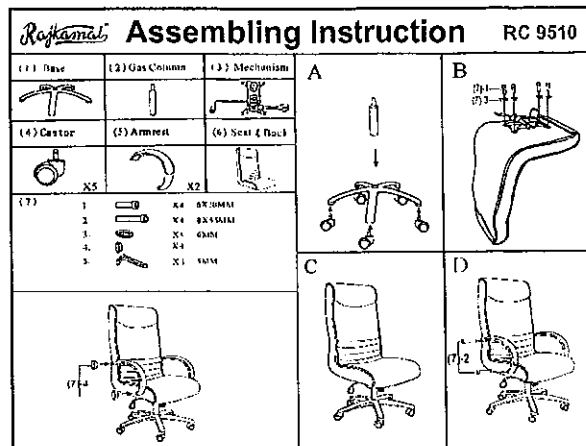


Figure 2: Adjustable chair

- (a) Assume that you are working in manufacturing industry, producing office furniture. Provide the FMEA worksheet for the assembly process of this chair as shown in Figure 2. Analyze any FIVE (5) parts in FMEA.

(12 marks)



Figure 3: Chair tipping due to broken chair

- (b) Based on Figure 3, using the concept of reliability testing on Fault Tree Analysis (FTA), analyze the failure of broken parts of the adjustable chair.

(8 marks)

- (c) Discuss the differences between FTA and FMEA.

(5 marks)

Question 3

"Flight AA 4727 to Johor Bharu will be delay from 9.10 pm to 9.40 pm. Passengers may have a sit until the next announcement. Sorry for the inconvenient caused and thank you for flying with us "

Table 1: Delay announcement in airport.

- (a) This is a common experience for all airways traveler especially in Malaysia. As the Quality Engineer of *Air Asiah*, analyze the cause of the delay. You may use any tools that you have learn in QRM. (10 Marks)
- (b) After analyzing the cause of the delay, you decided to implement the reliability concept in your company. Propose proper guidelines that you can follow in order to instill this concept to all your colleagues and top managers in your company. (6 marks)
- (c) Analyze the barriers that you will face and strategies to overcome the situations. Explain with appropriate examples. (9 marks)

Question 4

Company A	Company B
<ul style="list-style-type: none"> - ISO 9001:2008 - International Collaboration - Hired expatriate 	<ul style="list-style-type: none"> - Actively release new brand / model of product - High retention of workers

Table 2: Two different situation on different company

- (a) From your knowledge, elaborate the situation of both companies faced based on the conditions given. Provide also the proper recommendations which can be related to QRM course. (10 marks)
- (b) Differentiate types of failure with a **TWO (2)** proper examples. (5 marks)



Figure 3: Parking Lot area

- (c) You are being assigned to design an extended car park building at Kencana shopping complex, Johor Bharu as in Figure 3. Explain elements of Design for Safety and Design for Maintenance in your building design.

(10 marks)

Question 5

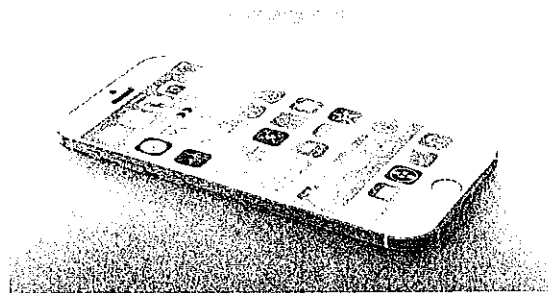


Figure 4: Apple's iPhone 7 prototype

Sustainability of the product in market is most important strategy to maintain and plan. A case study of Apple's brand for example, they do fail in certain product, yet they manage to penetrate and sustain in the market for a long period of time.

- (a) Based on your knowledge, judge the product life cycle of Apple's iPhone and predicts the activities or strategy for them in every stage.
(12 Marks)
- (b) Determine the riskiest stages for them throughout their life cycle. Justify your answer.
(3 Marks)
- (c) Discuss thoroughly on how this company can gain the trust of its customers.
(10 Marks)

END OF EXAMINATION PAPER

