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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2016/2017**

TERBUKA

COURSE NAME : OPERATION & MAINTENANCE
MANAGEMENT

COURSE CODE : BNB 30303

PROGRAMME CODE : 3 BNB

EXAMINATION DATE : DECEMBER 2016 / JANUARY 2017

DURATION : 3 HOURS

INSTRUCTION : ANSWERS ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

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- Q1** (a) Building maintenance performs general repairs to buildings and preventive maintenance of systems and equipment.
- (i) According to BS3811:1974 and BS8210:1986, define the definition of building maintenance. (2 marks)
 - (ii) List **EIGHT (8)** importance of maintenance. (8 marks)
 - (iii) In your opinion, elaborate the type of maintenance which is the best use in practise and explain **ONE (1)** importance of maintenance inventory. (9 marks)
- (b) In a maintenance information management, there are three types of databases that can be used to ensure the system is running smoothly.
- (i) List all **THREE (3)** types of databases. (3 marks)
 - (ii) Sketch **ONE (1)** structure of the databases that you have listed above. (3 marks)

Q2 A maintenance department considers procuring an engineering system. Four manufacturers are bidding to provide the system and their corrective maintenance cost related data are given in Table 1. Analyze which of the four systems will be less costly with respect to present values of corrective maintenance and by how much?

Table 1

Description	Manufacturer A System	Manufacturer B System	Manufacturer C System	Manufacturer D System
Expected life	12 Years	12 Years	12 Years	12 Years
Expected cost of a corrective maintenance action	RM 1000	RM 1500	RM 1200	RM 1150
Annual failure rate	2 failures per year	2.5 failures per year	3 failures per year	1.5 failures per year
Annual interest rate	9%	7%	8%	8%

(25 marks)



- Q3** (a) A lot of consideration must be taken into maintaining a roof. This includes the condition of the roof, water tightness, insulation, ventilation, maintenance concept and the roof structure.
- (i) Identify **FOUR (4)** aspects of a maintenance concept. (4 marks)
 - (ii) Give **TWO (2)** reasons why maintaining the roof structure is important although normally the roof structure does not require maintenance. (5 marks)
- (b) As a maintenance inspector in a company, you are appointed to inspect a school building in a certain area. Upon inspection and observation you have obtained photos of the problems affecting the building. Based on these photos **Figure Q3(a)**, **Figure Q3(b)**, **Figure Q3(c)**, **Figure Q3(d)**, interpret **FOUR (4)** main causes for each of these problems. (16 marks)
- Q4** Maintenance planning and scheduling are important to reduce maintenance cost, improve utilization of the maintenance workforce, improved quality of maintenance work by adopting the best methods and procedures.
- (a) Explain basic levels of planning process and the needs to utilize long and medium range planning. (8 marks)
 - (b) List down scheduling procedures or steps in order to make it effective. (7 marks)
 - (c) Classify **THREE (3)** types of documentations for building and construction contracts. (6 marks)
 - (d) In a partnering relationship, the role of a contractor is different from that in a traditional project. Explain **TWO (2)** advantages of partnering relationship. (4 marks)

-END OF QUESTIONS –

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Figure Q3(a)



Figure Q3(b)

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Figure Q3(c)



Figure Q3(d)