

**BERJAYA BUSINESS SCHOOL**

**FINAL EXAMINATION**

Student ID (in Figures) : 

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Student ID (in Words) : \_\_\_\_\_  
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Subject Code & Name : **MAT 1513 MATHEMATICS FOR BUSINESS**  
Semester & Year : January - April 2017  
Lecturer/Examiner : Ms. Faridah Hanum Amran  
Duration : 3 Hours

**INSTRUCTIONS TO CANDIDATES**

1. This question paper consists of 2 parts:  
PART A (30 marks) : THIRTY (30) multiple-choice questions. Answers are to be written in the Answer Booklet provided.  
PART B (70 marks) : FOUR (4) problem solving questions. Answers are to be written in the Answer Booklet provided.
2. Candidates are not allowed to bring any unauthorized materials except writing equipment into the Examination Hall. Electronic dictionaries are strictly prohibited.
3. This question paper must be submitted along with all used and/or unused rough papers and/or graph paper (if any). Candidates are NOT allowed to take any examination materials out of the examination hall.
4. Only ballpoint pens are allowed to be used in answering the questions, with the exception of multiple-choice questions, where 2B pencils are to be used.

**WARNING:** The University Examination Board (UEB) of BERJAYA University College of Hospitality regards cheating as a most serious offence and will not hesitate to mete out the appropriate punitive actions according to the severity of the offence committed, and in accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from BERJAYA University College of Hospitality.

**Total Number of pages = 10 (Including the cover page)**

**PART B : PROBLEM SOLVING QUESTIONS (70 MARKS)**

**INSTRUCTION(S) : FOUR (4) problem solving questions. Answer ALL questions in the Answer Booklet(s) provided.**

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**Question 1**

- a. RM 27,000 was saved every year for three years in an account that pays 10% compounded annually. Find the accumulated value if the interest rate was changed to 12% compounded annually after two year. (10 Marks)
- b. Farrukh Khan borrowed RM 11,345 for 16 months from his bank to purchase a yacht. He signed a promissory note that carried 15% interest. Find the amount of interest he must pay. Then find the total amount he must repay to his bank on the due date. (5 Marks)
- c. A debt of RM 15,760 on 20/8/2011 will amount to RM 23,451 on 28/7/2012. Find the rate of ordinary simple interest being charged using the approximate time. (5 Marks)
- [Total: 20 marks]**

**Question 2**

- a. Find  $f'(x)$  if:
- I.  $f(x): 100 + 10x^2 + 1x^4$  (3 Marks)
- II.  $f(x): 200x^{10} + {}^4\sqrt{20x}$  (3 Marks)
- III.  $f(x): (3x + 3)(x - 8)$  (4 Marks)
- b. Find the equation of the tangent line to the curve  $f(x) = 5x^2 + 25x + 5$  at the point  $x = 2$ . (10 Marks)
- [Total: 20 marks]**

### Question 3

A factory produces two products, Ree and See. Each product is produced using two machines, machine A and machine B. The following table gives the information on the usage of the machines.

Product	Machine A (hours)	Machine B (hours)
Ree	9	6
See	6	12

Due to the cost and manpower relationship, machine A must be used for at least 180 hours while the maximum capacity for machine B is 240 hours. The profit obtained from each unit of Ree is RM 53 and from each unit of See is RM 62.

- i. Formulate the objective function and constraints.  
(5 Marks)
- ii. Sketch the problem in the graph.  
(5 Marks)
- iii. Identify the corner points from the graph.  
(5 Marks)
- iv. If the company want to maximise its profit, how much it need to produce for Ree and See.  
(5 Marks)

**[Total: 20 marks]**

### Question 4

Solve the following system of equations by Cramer's rule:

$$x - 2y + 2z = 5$$

$$x - y = -1$$

$$-x + y + z = 5$$

**[Total: 10 marks]**

**END OF QUESTION PAPER**