



BERJAYA BUSINESS SCHOOL

FINAL EXAMINATION

Student ID (in Figures) :

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Student ID (in Words) : _____

Course Code & Name : **MAT1513 MATHEMATICS FOR BUSINESS**
Trimester & Year : January – April 2019
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 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.

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.

Question 1

- a. Fitri has to pay RM1,200 every month for 360 months to settle a housing loan at 4% compounded monthly. Calculate the original value of the loan. (4 Marks)
- b. Amy bought a piece of land for RM30,460.16. She made a down payment of RM10,000 and the balance was financed through a bank. She had to pay RM400 a month to settle the loan. If the bank charged 12% compounded monthly, determine the number of payments that will settle the loan. (6 Marks)
- c. A debt of RM4,400 due in two years and another RM7,700 due in seven years will be settled by making a single payment four years from now. Find the total payment assuming that money is worth 5% compounded quarterly. Use the fourth year as the focal date. (7 Marks)
- d. Aliyah invests RM2,600 in a fund that promises to give interest of 6% compounded semi-annually. Find the amount at the end of fourth year. (3 Marks)

[Total: 20 marks]

Question 2

A company produces two types of fabric detergents, Fragrant and Antibac. The production capacity of the company is 5,000 bottles daily. The company needs to produce at least 1,500 bottles of Fragrant and at least 2,500 bottles of Antibac daily to satisfy customers' demand. The profits obtained from Fragrant and Antibac are RM10 and RM15 per bottle, respectively. Using the graphical method, find the number of bottles for each type of detergent that must be produced daily in order to obtain maximum profit. State the maximum profit.

[Total: 20 marks]

Question 3

- a. The total revenue in ringgit per month of a product, $R(x)$ is given by $R(x) = 40x - 0.08x^2$, where x is the number of units produced and sold per month. Find:
- i. $R(50)$ (2 Marks)
 - ii. the average revenue function (2 Marks)
 - iii. the average revenue when 50 units are sold (2 Marks)
 - iv. the marginal revenue function (2 Marks)
 - v. the marginal revenue when 50 units are sold. (2 Marks)
- b. Solve $\log(x + 3) + \log x = 1$. (4 Marks)
- c. Condense each expression to a single logarithm.
- i. $20 \log_6 u + 5 \log_6 v$ (2 Marks)
 - ii. $4 \log_3 u - 20 \log_3 v$ (2 Marks)
 - iii. $2(\log 2x - \log y) - (\log 3 + 2 \log 5)$ (2 Marks)

[Total: 20 marks]

Question 4

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

$$-1x - 8y - 5z = 143$$

$$-6x - 3y + 7z = -81$$

$$2x + 9y - 4z = -41$$

[Total: 10 marks]

END OF QUESTION PAPER