



BERJAYA BUSINESS SCHOOL

FINAL EXAMINATION

Student ID (in Figures) :

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Student ID (in Words) : _____

Subject Code & Name : **MAT1513 MATHEMATICS FOR BUSINESS**
 Trimester& Year : September – December 2022
 Lecturer/Examiner : Suhada Binti Ishak
 Duration : 3 Hours

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of 2 parts:
 - PART A (30 marks) : THIRTY (30) multiple choice questions. Answer ALL questions. Shade your answers in the Multiple Choice Answer Sheet provided.
 - PART B (70 marks) : FOUR (4) problem solving questions. Answer ALL questions. Answers are to be written in the Answer Booklet provided.
2. Candidates are not allowed to bring any unauthorized materials except writing equipment and scientific calculator 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 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.

PART B : PROBLEM SOLVING QUESTIONS (70 MARKS)

INSTRUCTION(S) : FOUR (4) problem solving questions. Answer ALL questions. Answers are to be written in the Answer Booklet provided.

Question 1

- a) Explain the following terms:
- i. Interest
 - ii. Annuity
 - iii. Present Value
 - iv. Compound Interest
 - v. Amortization
- (5 marks)
- b) Mui Yi deposited RM 20,000 in a bank and obtained a simple interest of RM 1,500 after three years. Determine:
- i. The simple interest rate offered. (3 marks)
 - ii. How much interest could he earn if he deposited RM 10,000 in the same bank for nine months? (2 marks)
- c) Ben invested RM 5,000 into an account that pays an interest of 5% compounded semi-annually. Initially, he intended to keep the account untouched for 5 years. However, after 3 years, he had to withdraw RM 3,000. Find the amount left in the account five years from the time he made the investment. (5 marks)

[Total: 15 marks]

QUESTION 2

- a) Nouman pays RM200 for 2 pair of shirts and 2 pair of trousers while Nawal pays RM 500 for 1 shirt and 6 trousers for Hari Raya. If x and y represents the price of a shirt and a trouser respectively, write a system of linear equation in matrix form based on the information given. Using inverse matrix, $X = A^{-1}b$, determine the price of a shirt and a trouser. (8 marks)
- b) Solve the following system using Cramer's Rule:

$$\begin{aligned}x + z &= 0 \\3x + 2y + z &= 2 \\2x + 3y + 2z &= 2\end{aligned}$$

(12 marks)

[Total: 20 marks]

Question 3

a) Differentiate the following with respect to x .

i. $y = (x + 3)^6$

(4 marks)

ii. $f(x) = (3x^2 + 7)(6 - 5x)$

(4 marks)

b) Differentiate the following function to 3 higher order derivatives, $f^{(3)}(x)$.

(3 marks)

c) Find the critical point(s) by using second derivative test of the curve $f(x) = 2x^3 - 3x^2 - 12x + 2$. Hence, sketch the graph.

(14 marks)

[Total 25 marks]

QUESTION 4

a) Using basic rules of integration, find

i. $\int \frac{3}{x^5} dx$

(1 mark)

ii. $\int \sqrt[3]{x^5} dx$

(1 mark)

iii. $\int \frac{2x^5 - 3}{x^2} dx$

(1 mark)

iv. $\int (3x + 2)x^2 dx$

(1 mark)

v. $\int \frac{5}{2 - 6x} dx$

(1 mark)

b) Integrate $\int x^{-2} \ln x dx$ by using integration by part.

(5 marks)

[Total 10 marks]

END OF QUESTIONS