Private & Confidential

BERJAYA BUSINESS SCHOOL
FINAL EXAMINATION

Student ID (in Figures)	:	
Student ID (in Words)	:	

Subject Code & Name	:	**MAT1114 ESSENTIAL MATHEMATICS FOR BUSINESS**
Trimester& Year	:	September – December 2023
Lecturer/Examiner	:	Suhada Binti Ishak
Duration	:	2 Hours

INSTRUCTIONS TO CANDIDATES

1. **This question paper consists of 2 parts:**
   PART A (40 marks) : TWO (2) short answer questions. Answers are to be written in the Answer Booklet provided.
   PART B (60 marks) : THREE (3) structure type 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 =5 (Including the cover page)

PART A **: SHORT ANSWER QUESTIONS (40 MARKS)**

INSTRUCTION : **TWO (2)** short answer questions. Answer **ALL** questions in the Answer Booklet(s) provided.

Question 1

a) Find the **future value (*FV*)** and **interest earned (*I*)** for the following investments with *n* investment *of P* ringgit *at r%.*

P	*r%*	*n*
RM 10,000	2.5% compounded monthly	24
RM 3,500	8% compounded quarterly	20
RM 9,500	1.5% compounded annually	36

(9 marks)

b) Calculate the **periodic payments, *R*** that have to be made to settle the following loans.

Value of the loan (RM)	Interest	Period	Payment
RM 5,500	7% compounded quarterly	5 years	Quarterly
RM 50,000	2.5% compounded semi-annually	3 years	Semi annually
RM 450,000	3.1% compounded monthly	35 years	Monthly

(6 marks)

c) Melur plans to go on an overseas holiday two years from today. She saves RM 420 at the end of every 3 month period in an account which earns an interest of 10.5% compounded quarterly. How much will she have saved at the end of the two years?

(5 marks)

[Total 20 marks]

Question 2

a. Solve the following system of equation using Cramer's rule:

$$x + z = 0$$
$$3x + 2y + z = 2$$
$$2x + 3y + 2z = 2$$

(12 marks)

b. A shop sells three different size of product; small, medium and large. The price of a large product equal to the total of a small and medium products. Two different supermarkets get their supplies from this shop. Supermarket A buys 100 small size and 50 large size and pays RM 1,300.00. Supermarket B buys 30 small size and 25 large size and pays RM 600.00.

i. From the information above, form a system of linear equations.

(2 marks)

ii. Write the above linear equations in the form of matrix equation. Hence, Using inverse matrix, $X = A^{-1}b$ **,** determine the price of a small, medium and large size of the products.

(6 marks)

[Total 20 marks]

END OF PART A

PART B : STRUCTURE TYPE QUESTIONS (60 MARKS)
INSTRUCTION(S) : THREE (3) structure type questions. Answer ALL questions in the Answer Booklet(s) provided.

Question 1

The following table shows the quantities (kg) and the amount paid (RM) for meat bought from three hypermarkets.

Meat	Chicken (kg)	Beef (kg)	Mutton (kg)	Amount Paid (RM)
A	*u*	2*u*	1	115.00
B	*v*	3*v*	1	75.00
C	*w*	4*w*	1	60.00

Given the price in RM per Kg of chicken, beef and mutton be *x,*y, and *z* respectively.

a) Obtain a system of linear equations to represent the given information and hence write in the form of $AX = B$.

(2 marks)

b) Given the minor m_{11}, m_{23} and m_{31} of the matrix *A* are 2, 8 and 2 respectively. Find the value of u,v and w.

(8 marks)

c) Find the determinant, cofactor, adjoint and A^{-1} of matrix *A*. Hence, find the values of x, y and z.

(10 marks)

[Total: 20 marks]

QUESTION 2

a) Merqeen bought a lorry 5 years ago. Currently the value of the lorry is RM 100,000. The lorry has a life expectancy of 5 years. At the end of its useful life, the lorry will have a value of RM 40,000. By using a straight line method, calculate

i. the cost of the lorry.
ii. the annual depreciation

(5 marks)

b) Anna wants to sell her car, which was purchased for RM 120,000, after using for four years. The residual value after eight years is estimated to be RM 40,000. Two buyers are offering her car based on the book value. Buyers 1 is using the declining balance method while Buyers 2 is using sum of year digits methods to calculate the depreciation.

i. Find the book value of the car after four years for the two buyers. (5 marks)

ii. Which buyer is offering the better deal, state your reason? (10 marks)

[Total: 20 marks]

QUESTION 3

a. Dalila received an invoice for the amount of RM 5,000 is given a 4% discount. The cash discount is 3/15, n/30. The date of the invoice is September 22. How much must be paid if the invoice is paid on October 2?

(5 marks)

b. The list price of a refrigerator is RM 5,400. A chain discount of 10%, 5% and x% was given and the discount is RM 951.21. Find *x* and the single discount rate that is equivalent to the chain discount.

(8 marks)

c. Roziana receives an invoice dated 22 September 2023 for RM 5,500. This amount includes a handling charge of RM 50. The trade discount offered are 5% and 3% and the cash discount terms are 3/10, 2/20 and *n*/60. If the invoice is paid on 28 September 2023, find the amount paid.

(7 marks)

[Total: 20 marks]

END OF EXAM QUESTIONS