Private & Confidential

FACULTY OF BUSINESS

FINAL EXAMINATION

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

Course Code & Name	:	**MAT1513 MATHEMATICS FOR BUSINESS**
Semester & Year	:	May – August 2021
Lecturer/Examiner	:	Suhada Ishak
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 Multiple Choice Answer Sheet 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 unauthorised 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 = 9 (Including the cover page)

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. Identify the value of x for the following equations:

i. $\log(x+2) = 2.5$

ii. $2\ln x - \ln(x+1) = 0$

iii. $2^x 2^{x+1} = 7$

(6 marks)

b. For a semester break job, Dwayne decides to sell magazine subscriptions. He will be paid RM80 a day plus RM4 for each subscription he sells. If he works for 25 days and makes RM2580, identify the number of subscriptions did he sell.

(2 marks)

c. Aliya is investing RM 300 at the end of every months in a scheme which pays an interest of 6% compounded quarterly. The accumulated amount at the end of five years will be enough for down payment of a new house.

i. Calculate the amount of this down payment.

ii. Determine the amount of interest earned in the scheme.

(7 marks)

[Total: 15 marks]

Question 2

a. If $A = \begin{bmatrix} 3 & 5 & -6 \\ -2 & 0 & -1 \\ 9 & 7 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -9 & 2 \\ 6 & 5 & 4 \\ 3 & 8 & 8 \end{bmatrix}$, evaluate AB

(6 marks)

b. Solve the following system of equation using inverse matrix method:

$$2x + y + z = 12$$
$$6x + 5y - 3z = 6$$
$$4x - y + 3z = 5$$

(14 marks)

[Total: 20 marks]

Question 3

a. Differentiate the following function with respect to x

i. $y = (x^2 + 3)\left(\frac{x^3}{5}\right)$ (2 marks)

ii. $f(x) = \frac{5x^2 + 2}{x}$ (2 marks)

b. The output for a firm over time is given by the function

$$Q = \frac{t^3}{30} - \frac{t^2}{5} + \frac{3t}{10} + 120$$

Determine the years (t) in which the output is at maximum and a minimum.

(11 marks)

[Total: 15 marks]

Question 4

a. Using basic rules of integration, find

i. $\int \sqrt[7]{x^3}\,dx$ (2 marks)

ii. $\int (5x - 2)^{10}\,dx$ (2 marks)

iii. $\int \frac{1}{5x - 2}\,dx$ (2 marks)

iv. $\int e^{5x-2}\,dx$ (2 marks)

b. Sketch the supply function $P = Q^2 + 6Q$. Hence, compute the producer surplus at Q=4. Shade the producer surplus on the sketch**.**

(12 marks)

[Total: 20 marks]

END OF QUESTION PAPER