UNIVERSITI KUALA LUMPUR
BUSINESS SCHOOL

FINAL EXAMINATION
MARCH 2026 SEMESTER

COURSE CODE	:	EAB10703
COURSE TITLE	:	MATHEMATICS FOR BUSINESS
PROGRAMME NAME	:	BACHELOR IN ACCOUNTING (HONS)
DATE	:	24 JUNE 2026
TIME	:	2.00PM – 5.00PM
DURATION	:	3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY .
2. This question paper is printed on both sides of the paper.
3. This question paper consists of ONE sections.
4. Section A consists of five questions. Answer FOUR (4) questions only.
5. Please write your answers on the answer booklet provided.
6. Please answer all questions in ENGLISH only.
7. Refer to the attached Formula / Appendices. □ *Tick if applicable*

THERE ARE 11 PAGES OF QUESTIONS INCLUDING THIS PAGE

SECTION A (Total: 100 marks)

Answer FOUR (4) questions.

Please use the answer booklet provided.

Question 1

Answer all of the following questions:

(a) Determine the coordinates of the points at which the curve $y = x^2 + 1$ intersects the straight line $y = x + 3$.

(3 marks)

(b) Find the inverse of the matrix *A*, where

$$A = \begin{bmatrix} 2 & 1 & 0 \\ 1 & 3 & 2 \\ 0 & 2 & 1 \end{bmatrix}$$

(8 marks)

(c) A shop sells a jacket for RM120. The selling price includes a markup of 25% based on the cost price. Find the cost price of the jacket.

(3 marks)

(d) A customer buys a laptop costing RM5,000. He pays RM1,500 upfront. The remaining balance is financed at 6% simple interest per annum for 2 years. Find the total amount paid by the customer.

(4 marks)

(e) The fifth terms of an arithmetic progression is 12. The sum of the first five terms is 40. Find the first term and the common difference.

(3 marks)

(f) A function $f(x)$ is defined as:

i. $f(x) = 3x^2 - 4x + 7$. Find the value of $f'(2)$

(2 marks)

ii. $f(x) = \sqrt{x} - 3x$. Find the value of $f'(1)$

(2 marks)

Question 2

Answer all of the following questions:

(a) Solve the system of equations using a matrix method or Cramer's Rule:

$$\begin{cases} 2x + y = 7 \\ 3x - 2y = 4 \end{cases}$$

(4 marks)

(b) Given the quadratic function $y=x^2-6x+5$, find:

i. The coordinates of the vertex.

(2 marks)

ii. The x-intercept of the graph.

(2 marks)

(c) Yunus earns RM2,500 in 2020. His salary increases by 4% each year. Find his salary in 2026.

(4 marks)

(d) Evaluate the following integral:

$$\int_1^3 (2x^3 - x + 3)dx$$

(4 marks)

(e) Danish invests RM10,000 at 5% simple interest for 4 years.

i. Find the total amount at the end of 4 years.

(2 marks)

ii. Find the total interest earned.

(1 marks)

iii. State the interest earned in the third year.

(1 marks)

(f) A retailer offers successive discounts of 10% and 5% on a product priced at RM500.

i. Find the net price of the product.

(1 marks)

ii. Find the total discount given.

(2 marks)

iii. Find the single equivalent discount percentage.

(2 marks)

Question 3

Answer all of the following questions:

(a) Solve the system of equations using the inverse matrix method:

$$\begin{cases} x + y + z = 6 \\ 2x + 3y + z = 10 \\ x + 2y + 3z = 11 \end{cases}$$

(9 marks)

(b) An investment of RM2,000 earns 6% simple interest per annum for 5 years. Find the interest earned and the total amount at the end of the investment.

(3 marks)

(c) RM5,000 is deposited at 4% per annum compounded annually.

i. Find the amount after 6 years.

(2 marks)

ii. Estimate how many years it will take for the investment to reach RM6500.

(3 marks)

(d) A product is sold for RM80 after a 20% markdown. The business applies a 50% markup on cost. Find the original cost of the product.

(4 marks)

(e) Given

$$A = \begin{bmatrix} 1 & 2 \\ 3 & 1 \end{bmatrix}, B = \begin{bmatrix} 4 & -1 \\ 2 & 3 \end{bmatrix}$$

Show that AB≠BA.

(4 marks)

Question 4

Answer all of the following questions:

(a) Consider the following linear equations: $2y - 3x = 5$

$$y = \frac{1}{2}x + 4$$

i. Sketch both lines on the same Cartesian plane.

(3 marks)

ii. Hence, find the coordinates of their point of intersection.

(2 marks)

(b) Solve the quadratic equation: $2x^2-7x+3=0$.

i. Use the quadratic formula to find the roots of the equation.

(3 marks)

ii. Hence, express $2x^2-7x+3$ in factorised form.

(2 marks)

(c) Given

$$\begin{pmatrix} 3 & k \\ 2 & 4 \end{pmatrix}$$

i. Find the determinant of A.

(2 marks)

ii. Find the value of k if A is singular.

(3 marks)

(d) A company produces gadgets. The cost of producing x units is given by $C=5x+200$. The selling price per unit is RM10.

i. Determine the number of units required for the company to break even.

(3 marks)

ii. Calculate the profit when 50 units are produced and sold.

(3 marks)

(e) RM283 is deposited at the end of every month for 3 years 4 months at 9% per annum compounded monthly.
Find the future value of the investment at the end of the period and hence determine the total interest earned.

(4 marks)

Question 5

Answer all of the following questions:

(a) A certain sum of money is invested for a fixed period. It amounts to RM850 at 7% per annum simple interest. If invested at 4% per annum, it amounts to RM815. Find the time of investment.

(4 marks)

(b) The net price of a product after allowing trade discounts of 28% and 18% was RM7,888. Calculate:

i. The list price of the product.

(2 marks)

ii. The amount to be paid if the invoice with cash terms of 4/5, 2/10, n/30 was paid 9 days after the date of the invoice.

(2 marks)

(c) Find $\frac{d^2y}{dx^2}$ for each of the following functions:

i. $y=4x^3-6x^2+5x-9$

(2 marks)

ii. $y=2x^4-3x^3+4x^2-7x+1$

(2 marks)

(d) Given the following supply and demand functions:

$$P = 2Q + 8$$
$$P = -\frac{3}{2}Q + 50$$

i. Determine the equilibrium price and quantity.

(5 marks)

ii. Using the supply and demand functions, calculate the quantity supplied and quantity demanded at a price of RM30 (below equilibrium), and hence determine whether a shortage or surplus exists in the market.

(4 marks)

(e) Evaluate the following integral:

$$\int_1^4 \frac{2x+3}{x} dx$$

(4 marks)

END OF EXAMINATION PAPER

APPENDIX

MATHEMATICAL FORMULAE OF BUSINESS MATHEMATICS/MATHEMATICS OF BUSINESS

FUNCTIONS & GRAPHS

Linear Function: $y = mx + c$

or

$$ax + by = c$$

or

$$y - y_1 = m(x - x_1)$$

Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Quadratic Function: $y = ax^2 + bx + c = 0$

Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Axis of Symmetry (AOS)/Vertex: $x = \frac{-b}{2a}$

Vertex: $(x, f(x))$

APPLICATION OF FUNCTIONS

$R(x)$
= Unit Price x Total Quantity Sold
$TC/C(x) = FC + VC$
$P(x) = R(x) - C(x)$

Break-Even Point

$$= \frac{\text{Fixed Cost}}{\text{Selling Price per Unit} - \text{Variable Cost per Unit}}$$

Break – Even: $R(x) = C(x)$

MATRICES

2 × 2

Matrix Determinant

$$|A| = ad - bc$$

Matrix Inverse

$$A^{-1} = \frac{1}{ad - bc}\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$$

3 × 3

Matrix Inverse

$$A^{-1} = \frac{1}{\det(A)}\,\text{adj}(A)$$

or

$$A^{-1} = \frac{1}{\det(A)}(\text{cofactor of matrix } A(A))^T$$

SEQUENCES

Arithmetic Sequence

$$T_n = a + (n-1)d$$
$$S_n = \frac{n}{2}[2a + (n-1)d]$$

Geometric Sequence

$$T_n = ar^{n-1}$$
$$S_n = \frac{a(1-r^n)}{1-r}, r < 1$$
$$S_n = \frac{a(r^n - 1)}{r-1}, r > 1$$

INTEREST

Simple Interest

$$I = Prt$$
$$S = P + I$$

or

$$S = P(1 + rt)$$

Compound Interest

$$S = P(1+i)^n$$

where: $i = \frac{k}{m}, n = mt$

Interest amount: $I = S - P$

Annuity
Future Value

$$S = R\left(\frac{(1+i)^n - 1}{i}\right)$$

Annuity
Present Value

$$A = R\left(\frac{1-(1+i)^{-n}}{i}\right)$$

Trade And Cash Discount

$$\text{Trade Discount} = \text{List Price} \times \text{Trade Discount rate}$$

$$\text{Net Price } (NP) = \text{List Price} - \text{Trade Discount}$$

or

$$NP = \text{List Price} \times (1 - \text{Trade Discount Rate})$$

$$\text{Amount Credited} = \frac{\text{Partial Payment}}{(1-d)}$$

$$\text{Balance of Account} = \text{Value of Invoice} - \text{Amount Credited}$$

Markup And Markdown
Markup

$$\boldsymbol{R = C + M}$$

Markdown

$$\boldsymbol{MD = OP - NRP}$$

Net Profit

$$\boldsymbol{R = C + NP + OE}$$

DIFFERENTIATION

Standard Form

$$\frac{d}{dx}\ln x = \frac{1}{x}$$

$$\frac{d}{dx}e^x = e^x$$

General Form

$$\frac{d}{dx}\ln(f(x)) = \frac{f'(x)}{f(x)}$$

$$\frac{d}{dx}e^{f(x)} = f'(x)e^{f(x)}$$

INTEGRATION

Standard Form

$$\int e^x\,dx = e^x + c$$

$$\int \frac{1}{x}\,dx = \ln|x| + c$$

General Form

Where:

$$f(x) = ax + b$$

$$\int e^{f(x)}\,dx = \frac{e^{f(x)}}{f'(x)} + c$$

$$\int \frac{1}{f(x)}\,dx = \frac{\ln|f(x)|}{f'(x)} + c$$