



**UNIVERSITI KUALA LUMPUR
BUSINESS SCHOOL**

**FINAL EXAMINATION
FEBRUARY 2024 SEMESTER**

COURSE CODE : ECP00304
COURSE NAME : INTRODUCTION TO BUSINESS MATHEMATICS
PROGRAMME NAME : FOUNDATION IN BUSINESS
DATE : 27 JUNE 2024
TIME : 2.00 PM – 5.00 PM
DURATION : 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please **CAREFULLY** read the instructions given in the question paper.
 2. This question paper has information printed on both sides of the paper.
 3. This question paper consists of **FIVE (5)** questions.
 4. Answer **ALL** questions.
 5. Please write your answers on the answer booklet provided.
 6. All questions must be answered in **English** (any other language is not allowed).
 7. This question paper must not be removed from the examination hall.
 8. Formulas have been appended for your reference.
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THERE ARE THREE (3) PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

(Total: 100 marks)

INSTRUCTION: Answer All questions.**Please use the answer booklet provided.****Question 1**

- (a) Express the conversion in the table below.

(3 marks)

NO	EXPONENTIAL	LOGARITHMS
i.	$4^b = m$	_____
ii.	_____	$\log_7 49 = 2$
iii.	$x^y = z$	_____

- (b) Determine the following question with linear or non-linear equation.

(4 marks)

NO	EQUATIONS	LINEAR / NON-LINEAR EQUATIONS
i.	$xy + 2 = x$	_____
ii.	$x + 2 = y$	_____
iii.	$y = \frac{1}{2}x + \frac{7}{2}$	_____
iv.	$y^2 = -2x - 1$	_____

- (c) Solve
- $m(m+2) = 5$
- by using quadratic formula.

(3 marks)

- (d) Solve simultaneous below by using matrices.

$$x + y + z = 6$$

$$5x - y + 2z = 9$$

$$3x + 6y - 5z = 0$$

(10 marks)

Question 2

- (a) Haikal invested RM 20,000 in two different banks, Bank A and Bank B, which offer simple interest rates of 2.5% and 2% respectively. After 3 years, Haikal expects to earn a total interest of RM 1,425. Determine the amount Haikal should invest in each bank. (6 marks)
- (b) Sabrina has decided to invest RM 4,500 in a savings account with a simple interest rate of 3.2% per annum. Calculate the simple interest amount Sabrina will earn from this investment at the end of 4 years 6 months. Hence, find the simple amount. (5 marks)
- (c) Nabil invested RM Y at Mybank on 15 March 2024 at a simple interest rate of 2.4% per annum. On 29 August 2024, the accumulated amount is RM 15,164.26.
- Find RM Y by considering the exact time and exact simple interest accrued. (6 marks)
 - Find the amount of interest charged. (3 marks)

Question 3

- (a) RM 20,000 is deposited into an investment fund that offers a 3.2% annual interest rate compounded every two months for a duration of 14 years and 8 months. Determine the total amount accumulated at the end of the investment period. (5 marks)
- (b) Fatima invested RM 36,000 in a public mutual fund that earned an annual interest rate of k% compounded quarterly. After 4 years, the total accumulated amount was RM 42,500. Find the value of k. (5 marks)
- (c) 7 years ago, RM 15,000 was invested with 4.8% annual interest rate compounded semi-annually. Today, he deposited an additional RM 1,500 into the same account.
- Find the balance in his account today before the additional deposit. (4 marks)
 - Find the balance in his account three years after the additional deposit. (4 marks)
 - Find the total interest earned over the entire period. (2 marks)

Question 4

- (a) Lina deposits RM 300 monthly into an account that offers a 7.25% annual interest rate compounded monthly. Find the original amount of the loan if the total investment is 7 years and 12 months.

(6 marks)

- (b) Alyssa purchased a bedroom set for RM 10,500 and made a down payment of RM 500. The remaining balance was to be paid through monthly installments over three years. The interest rate charged was 2.25%, compounded monthly.

- i. Determine the monthly payment amount.

(6 marks)

- ii. If Alyssa fails to make the first six monthly payments, calculate the amount she would need to pay in the seventh payment to clear the outstanding arrears.

(4 marks)

- iii. If Alyssa decides to settle her loan immediately after the 30th payment, calculate the total amount to be paid.

(4 marks)

Question 5

Nadia purchased a vintage watch for RM 4,500 to sell it back. Upon selling it, she made a net profit of 25% based on the cost. The operating expenses amounted to 15% of the selling price.

- (a) Determine the selling price of the vintage watch.

(5 marks)

- (b) Calculate the breakeven price of the vintage watch.

(3 marks)

- (c) Find the profit or loss if the vintage watch was sold for RM 3,600.

(3 marks)

- (d) Determine the net profit or loss if the vintage watch was marked down by 20%.

(Hint: use the original selling price)

(6 marks)

- (e) Find the maximum percentage of markdown that can be given without incurring any loss based on the original selling price.

(3 marks)

END OF EXAMINATION PAPER

FORMULA LIST

$$1. \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$2. \quad m_1 = m_2$$

$$3. \quad m_1 \times m_2 = -1$$

$$4. \quad I = Prt$$

$$5. \quad S = P(1 + rt)$$

$$6. \quad S = P(1 + i)^n$$

$$7. \quad S = R \left[\frac{(1 + i)^n - 1}{i} \right]$$

$$8. \quad A = R \left[\frac{1 - (1 + i)^{-n}}{i} \right]$$

$$9. \quad SP = C + M$$

$$10. \quad M = OE + NP$$

$$11. \quad SP_B = C + OE$$

$$12. \quad \text{Maximum \% markdown} = \frac{SP - SP_B}{SP} \times 100\%$$