UNIVERSITI KUALA LUMPUR
Malaysian Institute of Marine Engineering Technology

FINAL EXAMINATION

OCTOBER 2025 SEMESTER SESSION

SUBJECT CODE	:	**LOD10503**
SUBJECT TITLE	:	**BUSINESS MATHEMATICS**
PROGRAMME NAME (FOR MPU: PROGRAMME LEVEL)	:	**DIPLOMA IN MARITIME MANAGEMENT**
TIME / DURATION	:	**9.00 AM - 12.00 PM (3 HOURS)**
DATE	:	**28 JANUARY 2026**

INSTRUCTIONS TO CANDIDATES

1. Please read **CAREFULLY** 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 **TWO (2)** sections; Section A and Section B.
4. Answer **ALL** question in Section A. For Section B, answer **TWO (2)** questions **ONLY.**
5. Please write your answers on this answer booklet provided.
6. Answer **ALL** questions in English language **ONLY**.
7. Refer to the attached formula / appendices.

THERE ARE 6 PAGES OF QUESTIONS, EXCLUDING THIS COVER PAGE.

SECTION A (Total: 60 marks)

INSTRUCTION: Answer ALL questions.

Question 1

(a) Find the value of ***z*** in the following equation

$$5(3z - 2) - 4(z + 7) = 2(6 - z)$$

(4 marks)

(b) Calculate the value of ***a*** and ***b*** that satisfy the following simultaneous linear equations.

$$4b = 20 - 4a$$

$$2a - 3b = 5$$

(6 marks)

Question 2

(a) State the four basic concepts of simple interest.

(2 marks)

(b) Explain the differences between simple interest and compound interest.

(4 marks)

(c) Sophia took out a loan of RM4,500 on 9th June 2025 and repaid it on 6th November 2025. The bank charged interest on the loan at a rate of 7.5% per annum. Find

i. the duration of the loan using exact time

(1 mark)

ii. the maturity value of the loan.

(3 marks)

Question 3

(a) Clarify ONE (1) reason why compound interest gives a higher return than simple interest over a long period.

(2 marks)

(b) Describe TWO (2) factors that affect the amount of compound interest earned.

(4 marks)

(c) Edwind deposited RM1,500 with a finance company that charges an interest rate of 12% compounded quarterly. Calculate the amount he will earn after the investment matures in 10 years.

(4 marks)

Question 4

(a) Give THREE (3) types of sales discounts used in business.

(3 marks)

(b) Farish runs a small stationery shop. He ordered 150 reams of 70gsm A4 Paper at RM12 each from a wholesaler on 15th November 2025. The wholesaler offers trade discounts of 12% and 6% with cash discount terms of 4/15, 1/30, n/60.

i. Define the cash discount terms given.

(3 marks)

ii. Find the net payment if the invoice was paid on 14th December 2025.

(4 marks)

Question 5

(a) Define the meaning of gross profit.

(2 marks)

(b) Explain TWO (2) reasons why businesses apply markdown.

(4 marks)

(c) Cortis Furniture Sdn Bhd bought a sofa set for RM1,850. The sofa was purchased with a net profit of 20% on the cost price. If the operating expenses were amounted to 10% based on cost, find

i. the selling price

(2 marks)

ii. the breakeven price.

(2 marks)

Question 6

(a) Differentiate between cash purchase and instalment purchase.

(4 marks)

(b) Explain ONE (1) reason why instalment purchase is popular among consumers.

(2 marks)

(c) Travis bought a car for RM110,000. The car is expected to last 8 years and its salvage value at the end of 8 years is RM30,000. Using the straight-line method, calculate

i. the annual depreciation

(2 marks)

ii. the annual rate of depreciation.

(2 marks)

SECTION B (Total: 40 marks)

INSTRUCTION: Answer TWO questions only.

Question 7

(a) Ling Xie wants to buy a RM4,500 kitchen set through instalment basis plan in which interest of 1% per month on any unpaid balance outstanding. She has to pay a RM500 down payment and RM500 every month plus interest outstanding.

i. Construct a repayment schedule.

(8 marks)

ii. Find the total interest charged.

(2 marks)

(b) A washing machine costed RM3,500 has a life expectancy of 5 years with a salvage value of RM500. Calculate and show the book values of the machine from year 1 to year 5 in a depreciation table by using straight-line method.

(10 marks)

Question 8

(a) Secret Design Company is considering two important project proposals with the following cash flows.

Period (Year)	Project A		Project B	
	Cost (Initial Outlay)	Net Cash Flow	Cost (Initial Outlay)	Net Cash Flow
0	RM 35,000		RM50,000	
1		RM15,000		RM20,000
2		RM20,000		RM15,000
3		RM25,000		RM10,000

For each project, calculate its net present value using a discount rate of 10% per annum and show the project that should be given the green light if the projects are mutually exclusive.

(10 marks)

(b) Five years ago, Safiya invested RM2,500 in a saving account at a bank that offered interest rate of 6.5% compounded every 4 months. Today, she added another RM1,500 to invest into the same account. Determine

i. the accumulated amount in the account after 8 years of saving

(5 marks)

ii. the effective rate which is equivalent to the nominal rate.

(3 marks)

(c) Discuss ONE (1) reason why banks prefer compound interest for savings accounts.

(2 marks)

Question 9

(a) Maevika purchased the following items from a hygiene beauty shop which offers trade discount of 12% and 5% on its products.

Items	List price
Body shower gel	RM29.90
Face cleanser	RM15.90
Shampoo	RM24.90

i. Find the net price of each item.

(6 marks)

ii. Find the total payment if Maevika bought 4 body shower gels, 3 face cleansers and 2 shampoos.

(4 marks)

(b) Explain the terms 'markup' and 'markdown'.

(4 marks)

(c) Clock Wise Sdn Bhd bought a number of watches at RM150 each. The shop makes a 20% markup on the cost. Soon after, the shop launched a sale and marked down the price of the watches by 15%. For each watch, calculate

i. the selling price before markdown

(3 marks)

ii. the selling price during the sale.

(3 marks)

END OF EXAMINATION PAPER

APPENDIX

LIST OF FORMULA

Simple Interest	Markup and Markdown
$M = P(1+rt)$	$R = C + M$
$Proceed = M(1-dt)$	$M = OE + NP$
$I = Prt$	**Installment Purchase**
Compound Interest	$IP = CP + I$
$A = P(1+i)^n$	$IP = D + TMP$
$P = A(1+i)^{-n}$	$I = Brt$
$i = \frac{r}{m}$	$R = \frac{B+I}{n}$
$n = m \times t$	Constant ratio, $r = \frac{2MI}{B(n+1)}$
$1 + R = (1+i)^m$	Balance outstanding = $RN - I\left(\frac{1+2+\cdots+N}{1+2+\cdots+n}\right)$
Trade and Cash Discount	**Depreciation**
$TD = LP \times r$	Annual depreciation = $\frac{Total\ depreciation}{n}$
$NP = LP(1-r_1)(1-r_2)\ldots(1-r_n)$	Annual rate of depreciation = $\frac{1}{n} \times 100$
$SEDR = 1 - [(1-r_1)(1-r_2)\ldots(1-r_n)]$	$BV = C - D_A$
Partial Payment	DB method: $BV = C(1-r)^n$
$Credit\ given = \frac{Partial\ Payment}{1-r}$	$r = 1 - \sqrt[n]{\frac{S}{C}}$
$Amount\ outstanding = LP - Credit\ given$	$Sum\ of\ years\ digit, S = \frac{n(n+1)}{2}$