



UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF MARINE ENGINEERING TECHNOLOGY

FINAL EXAMINATION
JANUARY 2017 SEMESTER

COURSE CODE : LGB11103
COURSE NAME : BUSINESS MATHEMATICS 1
PROGRAMME NAME : BACHELOR OF MARITIME OPERATIONS (HONS)
(FOR MPU: PROGRAMME LEVEL)
DATE : 11/07/2017 TUE
TIME : 9.00 AM - 12.00 PM
DURATION : 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please read **CAREFULLY** the instructions given in the question paper.
 2. This question paper has information printed on both sides.
 3. This question paper consists of **TWO (2)** sections; Section A and Section B. Answer **ALL** questions in Section A and **THREE (3)** questions from Section B.
 4. Please write your answers on the answer booklet provided.
 5. Write your answers only in **BLACK** or **BLUE** ink.
 6. Answer all questions in English.
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THERE ARE 6 PAGES OF QUESTIONS, INCLUDING THIS PAGE.

PART A (Total: 40 marks)

INSTRUCTION: Answer ALL questions.
Please use the answer booklet provided.

Question 1

- (a) Solve the following:

$$\begin{aligned}4x &= 2y - 12 \\ -9x + 7y &= 32\end{aligned}$$

(5 marks)

- (b) Find the inverse function of f given by $f(x) = \frac{x+2}{x-3}$.

(3 marks)

Question 2

Given the sequence 22, 18, 14, ..., -46.

- (a) Indicate whether the sequence is arithmetic or geometric. Explain your answer.

(2 marks)

- (b) Hence, determine the number of terms and the sum of the terms in the sequence.

(6 marks)

Question 3

A finance company charges a simple interest of 15% per year for short term loans. If a loan of RM30,000 is charged by RM16,875, find the duration of the loan. Three years later, another RM5,000 is added into the account, calculate the total amount for the loan.

(8 marks)

Question 4

ABC store has listed a pair of Lifestyle Sunglasses for RM1,002 less 40%. WXY, another store lists the same model for RM998 less 25%, less an additional 20%. Determine the additional rate of discount must the ABC store give, to meet WXY store price?

(8 marks)

Question 5

A retailer wants to sell Unique Women watch that costs RM450 at a price less 29% discount that will give them a 25% markup based on cost. Find the actual selling price and the list price of the watch.

(8 marks)

PART B (Total: 60 marks)

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 6

- (a) Explain the difference between present value of money and future value of money.
(2 marks)
- (b) Azlan invested RM20,000 in an account that pays 8% compounded monthly. This investment will be given to his four children when they reach 20 years old. Now, his four children are 12, 16, 17 and 19 years old. If all his four children will receive equal amounts, find the amount each will receive.
(10 marks)
- (c) If another RM5,000 is added into the same account when they reach 20 years old, determine the total amount two years from now and interest earned for the investment.
(8 marks)

Question 7

- (a) Sofea buys a condominium for RM500,000 and she pays 10% down payment. The balance is to be paid in equal monthly instalments for thirty years. The first instalment is due one month after the date of purchase and the interest rate is 4.8% compounded monthly. Calculate the monthly payment.

(10 marks)

- (b) If Sofea fails to make the first three monthly payments, find the amount should she pay on the fourth payment to settle all the outstanding arrears?

(5 marks)

- (c) Immediately after paying for twenty years, Sofea wants to settle the loan in full. Determine the amount that needs to be paid.

(5 marks)

Question 8

- (a) Based on Figure 1 below, rewrite the cash discount terms of the invoice for company A (assume that there is less 10% in 5 days payment).

TAX INVOICE						
Bill To: Supplier I 11 rue Albert Einstein 81 Academy Avenue Champs sur Merne Kedah 8000 Malaysia GST ID : 20004/2015 Co. Reg : 45478-K Tel : +60 10 588 458 Fax : +60 10 588 559			Invoice No : EX/2014/0001 Invoice Date : 01/01/14 Payment Term : 21 Days Invoice Ref. : PO/14/001 Due Date : 2014-01-14 Prepared By : Rahman			
Item	Description	Taxes	Quantity	Unit Price (RM)	Disc.(%)	Price (RM)
1	*Purchase item A	TX	1,000	10000.00	0.00	10000.00
Net Total (Excl. GST):						10000.00
GST Taxes @ (6%):						600.00
Total (Incl. GST):						10600.00
GST Summary		Date	Amount			
TX - Standard Rate Purchases (6%)		10000.00 RM	600.00 RM			
				For behalf of SkyGST Sdn. Bhd.		
				Authorized Signature & Company Chop		

Figure 1: Tax invoice of Company A

(2 marks)

- (b) The list price of a cell phone is RM3,290. A chain discount of 12%, 6% and $x\%$ was given and the discount is RM590.48, evaluate x and the single discount rate that is equivalent to the chain discount.

(8 marks)

- (c) A retailer receives an invoice dated 20 March 2017 for RM3,500. This amount includes a handling charge of RM28. The trade discounts offered are 10% and 5%, and the cash discount terms are 4/10, 2/15 and n/60. If the invoice is paid on 28 March 2017, find the amount paid.

(10 marks)

END OF EXAMINATION PAPER

FORMULAE OF BUSINESS MATHEMATICS 1

SEQUENCES

ARITHMETIC SEQUENCE	GEOMETRIC SEQUENCE
$T_n = a + (n-1)d$	$T_n = ar^{n-1}$
$S_n = \frac{n}{2}[2a + (n-1)d]$	$S_n = \frac{a(1-r^n)}{1-r}, r < 1$
	$S_n = \frac{a(r^n-1)}{r-1}, r > 1$

INTEREST

SIMPLE INTEREST	COMPOUND INTEREST
$I = Prt$	$S = P(1+r)^n$
$S = P + I$	$r = \left(1 + \frac{j}{m}\right)^m - 1$

ANNUITY

FUTURE VALUE	PRESENT VALUE
$S = R \frac{(1+r)^n - 1}{r}$	$A = R \frac{1 - (1+r)^{-n}}{r}$

TRADE AND CASH DISCOUNT

$\begin{aligned} \text{Net Price} &= \text{List Price} - \text{Trade Discount} \\ &= (1 - \text{Trade Discount}) \times \text{List Price} \end{aligned}$
$\text{Amount Credited} = \text{Partial Payment} / (1 - d)$
$\text{Balance of Account} = \text{Value of Invoice} - \text{Amount Credited}$

MARKUP AND MARKDOWN

MARKUP	MARKDOWN
$C + MU = SP$	$OP - RP = MD$
$SP = C + OE + NP$	