UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF MARINE ENGINEERING TECHNOLOGY

FINAL EXAMINATION
JANUARY 2017 SEMESTER

COURSE CODE	:	LGB13003
COURSE NAME	:	BUSINESS MATHEMATICS 1
PROGRAMME NAME (FOR MPU: PROGRAMME LEVEL)	:	BACHELOR OF MARITIME OPERATIONS (HONS)
DATE	:	14/07/2017 FRI
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 yours answers on the answer booklet provided.

5. Write your answers only in BLACK or BLUE ink.

6. Answer all questions in English.

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)   Given that $f(x) = 2x^2 + 4x + 1$ and $g(x) = 2x + 1$, find $(f \circ g)(x)$.

(5 marks)

(b)   Find the inverse function of f given by $f(x) = (x-3)^2$.

(3 marks)

Question 2

Given that $2, 2p + 2, 9p + 5, ...$ is an arithmetic progression.

(a)   Solve the value for p.

(5marks)

(b)   Hence, find T_{31}.

(3 marks)

Question 3

Mrs. Ong invested an amount of RM15,000 in two different banks, Bank A and B that offers the simple interest rate of 11% per annum and 9% per annum respectively. If the total amount of simple interest earned in 3 years be RM4,500, find the amount invested in Bank B.

(8 marks)

Question 4

The net price and discounts offered for two different refrigerator sold by Company A in the Chinese New Year sale promotions are given in the Table1 below:

Table 1: Two types of refrigerator sold by Company A

Type	List price	Net price
Samsung	RM 4129	RM 3299
Sharp	RM 4899	RM 4299

Obtain the discount offered for the each type of refrigerator.

(8 marks)

Question 5

A dealer bought a smart UHD television for RM5,999 less 15% and 5%. He sold it at a discount of 25%. If the gross profit earned by the dealer is 20% on the net retail price, find the list price of the television.

(8 marks)

PART B (Total: 60 marks)

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

Question 6

(a)   Explain the difference between simple interest and compound interest.

(2 marks)

(b)   Ismadi puts RM30,000 into a savings account that pays interest every month at a rate of 1.8% per year. If he leaves his original investment and the first month of interest in the account, calculate the amount will he have after the second month.

(8 marks)

(c)   On 6 June 2014, a man deposits RM1,550 into an account that pays an interest 7.5% compounded quarterly. Find the amount accumulated on 6 December 2017 if the rate was changed to 8% compounded semi-annually beginning 6 June 2016.

(10 marks)

Question 7

(a)   Aishah deposits $RM\,K$ in a savings account in anticipation of withdrawing RM2,450 at the end of each year for the next three years to use for vacation to Jeju Island. The account pays an interest rate of 6% compounded monthly. She wants the account balance to be zero at the end of three years. Determine the sum of money ($RM\,K$) that Aishah deposited.

(8 marks)

(b)   Hence, evaluate the interest earned.

(4 marks)

(c)   Maisarah, a graduating students with RM21,000 student loans negotiates a ten years repayment plan with academic funder. She will make an initial repayment of RM2,000 now and repay the remaining balance with payments made at the end of each month. Determine the monthly payment if the loan interest rate is 3% compounded monthly. Just immediately, she has not paid her five monthly payments, calculate her sixth payment to settle all outstanding arrears.

(8 marks)

Question 8

(a)   Geetha bought a new car by trading in her old car which was valued at RM7,800. She had to make an additional payment of RM3,000 as a down payment. She paid RM950 every month for five years. The first payment was made one month after the date of purchase. The interest rate charged was 4.5% per annum on the original balance. Determine the installment price of the car.

(5 marks)

(b)   Hence, find the cash price of the car and the total interest charged.

(10 marks)

(c)   One of the benefits of having a credit cards is that we are always covered in case of emergency. Besides, some people keep a card around for daily use. State the definition of credit cards and explain four types of credit cards.

(5 marks)

FORMULAE OF BUSINESS MATHEMATICS 1

SEQUENCES

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

INTEREST

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

ANNUITY

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

TRADE AND CASH DISCOUNT

Net Price = List Price – Trade Discount = (1 – Trade Discount) x List Price
Amount Credited = Partial Payment / (1 – d)
Balance of Account = Value of Invoice – Amount Credited

MARKUP AND MARKDOWN

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