UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF MARINE ENGINEERING TECHNOLOGY

FINAL EXAMINATION
SEPTEMBER 2016 SEMESTER

COURSE CODE	: LGB11103
COURSE NAME	: BUSINESS MATHEMATICS 1
PROGRAMME NAME (FOR MPU: PROGRAMME LEVEL)	: BACHELOR OF MARITIME OPERATION
DATE	: 18 JANUARY 2017
TIME	: 02.00 PM – 05.00 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 TWO (2) sections; Section A and Section B.
4. Answer ALL questions in Section A. For Section B, answer THREE (3) questions.
5. Please write your answers on the answer booklet provided.
6. Answer all questions in English language ONLY.

THERE ARE 7 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

PART A (Total: 40 marks)

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

Question 1

(a) Calculate the inverse function of $f(x) = 2x - \frac{x}{3} + 1$.

(2 marks)

(b) Given $g(x) = x^2 - 1$ and $h(x) = 2x + 1$. Calculate $h \circ g$.

(3 marks)

Question 2

The 7^{th} term is twice than 5^{th} term. The third term of an arithmetic sequence is less than the fourth term by three. Determine the common difference and the first term.

(5 marks)

Question 3

Determine the minimum number of terms in the sequence 3, 12, 48, 192, ...,196608 .

(5 marks)

Question 4

Calculate the future value and the interest earned for instalment RM500 every month for 2 years and 5 months at 5% compounded monthly.

(4 marks)

Question 5

(a) The net price of a camera with 40% trade discount is RM480. Calculate the list price?

(3 marks)

(b) A bill of RM600 including a prepaid handling charge of RM40 is offered a trade discount of 12%. What is the net price?

(4 marks)

Question 6

(a) A machine is advertised for RM3000 less 30%, 7% and 3%. Calculate the net price.

(3 marks)

(b) The total of an invoice with cash discount terms of 3/10, n/30 amounts to RM2090 which includes a prepaid freight charge of RM50. Calculate the amount that is needed to pay the invoice within the cash period.

(4 marks)

Question 7

(a) Calculate the markup percentage based on retail price if the markup percent based on cost is 20%.

(3 marks)

(b) Faridah purchased an antique table for RM6000 less RM105 and 5%. She sold the table by offering a discount of 40%. Determine the retail price before discount if she made a 30% gross profit based on cost.

(4 marks)

PART B (Total: 60 marks)

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

Question 8

(a) Solve the following simultaneous equation

$$s + 3t = 24$$
$$3s - t - 12 = 0$$

(4 marks)

(b) Thirty months ago, a sum of money was invested in a bank. Now, the investment is worth RM3200. If this investment is extended another 24 month, it will be worth RM3550. Determine the simple interest rate and the sum of money that was invested.

(8 marks)

(c) Badrul borrows RM 7500 at 12.5% per annum simple interest. He agrees to settle the loan by paying X ringgit, $2X$ ringgit and $3X$ ringgit in two months, five months and nine months respectively. Evaluate the value of X.

(8 marks)

Question 9

(a) Solve $(y-1)(y+4) = 7$

(4 marks)

(b) Muiz opened an account with an initial deposit of P on July 15, 2015. The account earned an interest of 8.5%. On January 4, 2016, when he checked his account he found it worth RM2730. Evaluate

i. the value of P

(6 marks)

ii. the amount of interest earned in Ringgit

(2 marks)

(c) On 10 March 2016 Kelvin deposited RMK in an account that paid 8% per annum simple interest. On 28 August 2016, he withdrew RM8000 from the account and the balance in the account was RM4000. Calculate the initial deposit RMK using the Banker's rule.

(8 marks)

Question 10

(a) Calculate the nominal rate, j compounded quarterly which is equivalent to 9.5% compounded daily.
(Hint: One year is equivalent to 360 days)

(4 marks)

(b) The debt of RM2000 is due at the end of first year and another debt of RM8000 is due at the end of seventh year. The debtor wishes to settle all his loan by making two equal repayments, one at the end of second year and another at the end of forth year. What are these equal repayments if money is worth 5% compounded semi-annually?

(8 marks)

(c) Majid purchased a shop and mortgaged it for RM100000. The mortgage requires repayment in equal monthly payments over ten years at 16% compounded monthly. Just immediately after making the 80^{th} payment, she had the loan refinanced at 14% compounded monthly. What is the new monthly payment if the number of payments remained the same?

(8 marks)

Question 11

(a) Two buyers are interested in buying Coffee and Fini restaurant. The first buyer will pay a down payment of RM50000 followed by RM75000 a year later. The second buyer will pay a down payment of RM20000 followed by two payments of RM48000 each. The first and second payments are 3 and 5 months respectively from the date of purchase. Money is worth 9% compounded monthly. Which offer should Coffee and Fini accept?

(8 marks)

(b) Adam placed RM5000 in a bank account for six years. The bank offered an interest rate of 6% compounded monthly for the first four years and r% compounded annually for the rest of the period. If the amount in the account at the end of six years was RM6850, calculate the value of r.

(8 marks)

(c) RM400 was invested every month in an account that pays 10% compounded monthly for 18 months. Calculate the amount in the account after 18 months.

(4 marks)

Question 12

(a) RM50 was invested every month in an account that pays 12% compounded monthly for two years. After two years, no more deposit was made. Determine the amount of the account at the end of the five years and the interest earned.

(4 marks)

(b) A computer table is purchased for RM250. Operating expenses amounts to 25% of the cost. If the retailer wants a 12% net profit based on cost, calculate

i. retail price,

(2 marks)

ii. the gross profit,

(2 marks)

iii. the net profit,

(2 marks)

iv. the breakeven price,

(3 marks)

v. the maximum markdown percent that can be offered so that no loss is incurred,

(4 marks)

vi. If the retail price is RM300, calculate the profit or loss.

(3 marks)

END OF QUESTION