UNIVERSITI TEKNOLOGI MARA
FINAL EXAMINATION

COURSE	:	BUSINESS MATHEMATICS
COURSE CODE	:	MAT112
EXAMINATION	:	DECEMBER 2015
TIME	:	3 HOURS

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of ten (10) questions.

2. Answer ALL questions in the Answer Booklet. Start each answer on a new page.

3. Do not bring any material into the examination room unless permission is given by the invigilator.

4. Please check to make sure that this examination pack consists of :

    i)   the Question Paper
    ii)   a one – page Appendix 1 (Tax Rate Schedule For Personal Income)
    iii) a one – page Appendix 2 (List of Formulae)
    iv) an Answer Booklet – provided by the Faculty

5. Answer ALL questions in English.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

This examination paper consists of 4 printed pages

QUESTION 1

The monthly amount of money donated by Ahmad to Yayasan Budiman can be described in the form of geometric sequence as follows:

RM1000, RM1100, RM1210, ...

Find the total amount of money donated for 2 years.

(5 marks)

QUESTION 2

On 10th February 2015, Shakirah saved RM12,000 in an account that pays simple interest $k\%$ per annum. The balance in the account on 11th May 2015 was RM12,240. Find the value of k using the Banker's Rule.

(7 marks)

QUESTION 3

a) A 58-day promissory note with an interest rate of 12% per annum matured on 17th November 2015. If the maturity value of the note was RM30,580, find the

i) date of the note.

(3 marks)

ii) face value of the note.

(4 marks)

b) Jacqueline has to pay RM2,040 at the end of 20 days for her bank loan. If the bank charges a 5% discount rate, find the amount of bank discount and proceeds.

(6 marks)

QUESTION 4

Alvin invested RM600 for 10 years 2 months. The investment offered an interest rate of 8% compounded every three months for the first 5 years and 9% compounded monthly for the rest of the period. Calculate the accumulated amount of money in the account at the end of the investment period.

(8 marks)

QUESTION 5

A piece of land that costs RM60,000 is purchased by making 10% down payment. The balance is financed through an installment plan that charges 4.5% interest compounded monthly for 10 years.

a) Calculate the monthly payment.

(8 marks)

b) Determine the amount of interest charged.

(3 marks)

c) If the loan is settled 4 years earlier than the actual period through a single payment, find this single payment.

(4 marks)

QUESTION 6

Rayyan purchased a home theater set and paid 20% down payment which amounted to RM2,000. He had to pay 20 monthly payments to settle the balance. The interest rate charged was 8.5% per annum based on reducing balance. Calculate the

a) cash price of the home theater set.

(3 marks)

b) monthly payment using the Constant Ratio formula.

(6 marks)

c) outstanding balance right after the 8th payment using the Rule of 78.

(5 marks)

QUESTION 7

Elliana bought a Smartphone for RM800. She sold the phone with a markup of 20% on the selling price. If the net profit obtained was RM95, calculate the

a) selling price.

(4 marks)

b) operating expenses.

(3 marks)

c) break-even price.

(3 marks)

QUESTION 8

Jati Furniture Shop received a RM48,250 invoice dated 30th October 2015 with trade discounts of 10% and 8%. A cash discount terms of 4/15, 2/25, n/45 was offered.

a)   Determine the single trade discount equivalent to the given trade discounts.

(3 marks)

b)   Find the amount paid if the payment is made on 10th November 2015.

(5 marks)

QUESTION 9

A machine costing RM50,000 has an estimated life of 8 years and scrap value of RM30,000. Find the book value of the machine at the end of 5th year using the

a)   straight line method.

(4 marks)

b)   declining balance method.

(4 marks)

QUESTION 10

Mr. Khalid and his wife have 3 children. The eldest child is studying at the local university and the other two are still schooling. The table below shows their incomes and expenditures for the year 2014.

	Khalid	Wife
	(RM)	(RM)
Annual Income	72,000	36,000
EPF Contributions	7,920	3,960
Life Insurance Premium	2,200	800
Cash Donations to Approved Charitable Bodies	500	-
Books and Journals	1,200	-
Part-time education	4,000	-
Sport equipment	-	200
Zakat	600	300

Assess their tax by separate assessment.

(12 marks)

END OF QUESTION PAPER

CONFIDENTIAL

TAX RATE SCHEDULE FOR PERSONAL INCOME

	Taxable Income (RM)	Rate	Tax (RM)
On the first On the next	2,500 2,500	0 0	0 0
On the first On the next	5,000 5,000	 2	0 100
On the first On the next	10,000 10,000	 2	100 200
On the first On the next	20,000 15,000	 6	300 900
On the first On the next	35,000 15,000	 11	1,200 1,650
On the first On the next	50,000 20,000	 19	2,850 3,800
On the first On the next	70,000 30,000	 24	6,650 7,200
On the first On the next	100,000 Every RM after	 26	13,850 ---------

LIST OF FORMULAE

1. $T_n = a + (n-1)d$	2. $S_n = \dfrac{n}{2}[2a + (n-1)d]$
3. $T_n = ar^{n-1}$	4. $S_n = \dfrac{a(r^n - 1)}{r - 1}$
5. $S = P(1 + rt)$	6. Proceeds $= S(1 - dt)$
7. $r = \dfrac{d}{1 - dt}$	8. $d = \dfrac{r}{1 + rt}$
9. $S = P(1 + i)^n$	10. $r_e = (1 + i)^m - 1$
11. $S = R\left[\dfrac{(1+i)^n - 1}{i}\right]$	12. $A = R\left[\dfrac{1 - (1+i)^{-n}}{i}\right]$
13. $SP = C + M$	14. $GP = OE + NP$
15. $NP = LP(1 - d_1)(1 - d_2).....(1 - d_n)$	16. $r = \dfrac{2mI}{B(n+1)}$
17. $r = 1 - \sqrt[n]{\dfrac{S}{C}}$	18. $BV_n = C(1 - r)^n$
19. $OPB = (R \times k) - I\left(\dfrac{k(k+1)}{n(n+1)}\right)$	