UNIVERSITI TEKNOLOGI MARA
FINAL EXAMINATION

COURSE	:	BUSINESS MATHEMATICS
COURSE CODE	:	MAT402
EXAMINATION	:	JUNE 2015
TIME	:	3 HOURS

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of five (5) 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 page

QUESTION 1

a) On 5 February 2013, Ramesh deposited a sum of money, RM***Z*** in a fund that offered 7.5% simple interest. On 25 July 2013, she withdrew RM12,000 from the fund and she had a balance of RM2,950. By using the approximate time and exact simple interest, find the value of ***Z***.

(5 marks)

b)

RM*14,000* *12 February 2014*

120 days after date, I promise to pay to *Mr. Yup Ah Loy* Ringgit Malaysia: *Fourteen Thousand only* for value received with the interest at 6% per annum until paid.

No:7236 Due: ***Y***

Mr Cheng Hwa

Based on the above promissory note,

i) who is the maker of the note?
ii) who is the payee of the note?
iii) find the maturity value of the note.
iv) find ***Y***.
v) find the amount of interest charged by the payee.

(10 marks)

c) Suzy borrowed a sum of money for 110 days from a bank that charged a discount rate of 8.5%. If the amount of discount was RM225, find

i) the amount of money borrowed
ii) the amount of money received
iii) the equivalent simple interest rate that was charged by the bank.

(5 marks)

QUESTION 2

a) Five years ago, Ah Meng borrowed RM15,000 from a bank with the interest rate of ***r%*** compounded quarterly. Find ***r*** if the amount of the debt today is RM17,943.81.

(5 marks)

b) Suneeta intends to invest RM1,500 every month for 3 years at 12% compounded monthly. Find

i) the future value at the end of the annuity.
ii) the interest that will be earned.

(5 marks)

c) Ranjit makes a loan from a bank for 20 years. An interest rate of 7.5% compounded monthly with a monthly payment of RM100 is charged by the bank towards the loan. An amount of RM5,000 that is part of the loan is invested in Scheme A that offers simple interest rate of 5% per annum.

i) Find the future value of the investment in Scheme A after 10 years.
ii) Ranjit intends to settle the debt immediately at the end of the 10^{th} year by using the money obtained from his investment in c) i). How much more money should he add?

(10 marks)

QUESTION 3

a) Given the sequence : $10, \frac{93}{10}, \frac{86}{10}, \frac{79}{10}, ..., \frac{37}{10}$.

i) Determine whether the sequence is arithmetic or geometric. Justify your answer.
ii) Find the sum of the first eight terms.

(5 marks)

b) Suria bought a bedroom furniture at RM6,000 through an installment plan. A 10% down payment with 156 equal weekly payments are charged through the installment plan. If the interest rate charged on the installment plan is 4.5% per annum based on flat rate, calculate the weekly payment. (Assuming 1 year = 52 weeks)

(5 marks)

c) A cash price of a motorbike is RM8,400. Alex bought the motorbike by paying a down payment of RM1,400 while the balance of the debt is paid monthly for 2 years. If the interest rate charged is 7% per annum on declining balance, calculate the

i) total interest charged by using the Constant Ratio Formula
ii) monthly payment
iii) outstanding balance just after the 11^{th} payment using the Rule of 78.

(10 marks)

QUESTION 4

a) A retailer received an invoice dated 8 October 2014 for the purchase of 100 units of books at RM50 each. The invoice offered trade discounts of 12% and 8% with cash discount 10/10, 5/20, n/31.

i) Calculate the amount of payment if the invoice is paid at 21 October 2014.
ii) If the retailer intends to sell each of the books at RM55 with the operating expenses of 12% based on cost, then find the total net profit that will be earned by the retailer.
iii) Find the breakeven price of each book.
iv) Find the total discount rate that can be given for each book in order to avoid loss.

(10 marks)

b) Liyana produces 300 cookies per day, which cost RM1,500. If a net profit of 15% based on selling price and operating expenses of 7.5% based on cost are estimated, find the selling price of a cookie.

(5 marks)

c) On 2 July 2014, Maria received an invoice of 100 rice cookers after the trade discounts of 25% and 20%. A freight cost of RM107 is also included in the invoice. If a payment of RM5,350 was made on 6 July 2014 with cash terms of 5/10, n/30, find the list price of each rice cooker.

(5 marks)

QUESTION 5

a) Raju owns Asset 1 and Asset 2 where details are given as follows:

Item	Asset 1	Asset 2
Cost (RM)	25,530	25,000
Annual rate of depreciation (%)	20	***k***
Method of depreciation	Straight line	Declining balance

i) The total depreciation for Asset 1 over its useful life is estimated to be RM12,000, calculate the price that should be offered by Raju if he wishes to sell the asset after using it for 5 years.

ii) Find the value of ***k*** if the book value of Asset 2 at the third year is RM15,000.

(5 marks)

b) Amri and Dhia are married with three children. Two of their children are still schooling. The eldest one is a handicap studying full-time at the Local University. Amri does his part-time doctorate in bussiness administration. Their income and expenses for the year 2014 were as follows:

Particular	Amri (RM)	Dhia (RM)
Monthly Income	15,000	3,000
EPF	3,500	680
Zakat	3,000	200
LIP	3,000	500
Books and Journals	3,250	1,000
Parents Medical Fees	2,000	-
Approved donation	500	100
SSPN	3,000	-
Computer	3,000	-

Calculate the tax liability for the assessment year using separate assesment.

(15 marks)

END OF QUESTION PAPER

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