UNIVERSITI TEKNOLOGI MARA
FINAL EXAMINATION

COURSE	:	**BUSINESS MATHEMATICS**
COURSE CODE	:	**MAT112**
EXAMINATION	:	**OCTOBER 2016**
TIME	:	**3 HOURS**

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of two (2) parts : PART A (8 Questions)
   PART B (3 Questions)
2. Answer ALL questions in the Answer Booklet. Start each answer on a new page.
3. Calculator can be used.
4. Do not bring any material into the examination room unless permission is given by the invigilator.
5. 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 Formula)
   iv) an Answer Booklet – provided by the Faculty
6. Answer ALL questions in English.

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

This examination paper consists of 5 printed pages

PART A

QUESTION 1

The fifth term of an arithmetic sequence is 24 and the sum of the first ten terms is 265. Find the common difference of the sequence.

(5 marks)

QUESTION 2

Shiela had saved RM3,000 in an account that offered r% simple interest per annum on 20 March 2015. If the interest on 6 June 2015 was RM50, find the value of r using Banker's Rule.

(5 marks)

QUESTION 3

The owner of a new start up software company needs RM7,000 to get his business started as soon as possible. He decides to take a loan from a bank which charges a discount rate of 5%. If the amount of bank discount is RM175, find the amount of the loan.

(5 marks)

QUESTION 4

Liza deposited RM X into an account that paid an interest rate of 5% compounded monthly. After 2 years, the accumulated amount was RM28,347.27. Calculate the value of X.

(5 marks)

QUESTION 5

Cynthia made equal payments of RM300 every month for two years at 12% interest compounded monthly. Find the amount of loan taken by Cynthia.

(5 marks)

QUESTION 6

Juliet purchased a house listed at RM100,000 through a hire purchase agreement in which she has to pay RM10,000 as a down payment. The balance has to be repaid by making monthly payments for 35 years. If the interest charged is 9.5% per annum on the reducing balance, calculate the outstanding balance just after paying the 120^{th} payment using the rule of 78.

(5 marks)

QUESTION 7

Ali bought a computer listed at RM5,000. He was given trade discounts of 20%, 10% and 5%. Find the net price of the computer.

(5 marks)

QUESTION 8

The cost of a new machine is RM600,000. It is estimated to have a useful life of 15 years with a scrap value of RM10,000. Calculate the book value at the end of seven years using the straight line method.

(5 marks)

PART B

QUESTION 1

a) An invoice dated 26 October 2014 amounted to RM8,260 was offered trade discounts of 7%, 2% and cash discount terms of 3/15, 2/30, n/60. Find:

i) the net price after trade discount.

(3 marks)

ii) the amount paid on 17 November 2014.

(5 marks)

b) Ali and his wife, Ani have 5 children. Three of the children are still schooling. The other two are above 18 years old, one of them is working and the other is studying in a local university. Their income and expenditures for the assessment year were as follows.

	Ali (RM)	**Ani (RM)**
Total income	60,000	40,000
EPF	4,730	3,894
LIP	3,250	3,000
Cash donations	800	700
Parents medical expenses	8,000	1,000
Purchase of computer	-	4,500
Zakat	350	-

Assess their tax payable if they choose joint assessment.

(12 marks)

QUESTION 2

a) Said received a 60-day promissory note with a simple interest rate of 8% and a maturity value of RM2,533.33. The maturity date of the note was 19th June 2014. Find:

i) the date of the note.

(5 marks)

ii) the face value of the note using the Banker's Rule.

(5 marks)

b) A shirt was bought for RM250. The total operating expenses incurred in selling the shirt was 45% of the cost. The retailer made a net profit of 15% based on the cost. Find:

i) the selling price of the shirt.

(4 marks)

ii) the maximum markdown percentage could be offered so that there is no loss/profit.

(6 marks)

QUESTION 3

a) A retailer sells freezers at RM4,000 per unit. On the instalment plan, a down payment of RM550 is required and the balance is to be paid in 24 equal monthly payments at 8% simple interest based on the original balance. Find

i) the monthly payment.

(3 marks)

ii) the instalment price of the freezer.

(5 marks)

b) Mary took a loan of RM100,000 from a bank at an interest of 5% compounded monthly. She had to settle the loan in 9 years.

i) Find the monthly payment

(5 marks)

ii) Immediately after paying for 8 years, she wanted to pay off her debt. Calculate the amount to be settled.

(7 marks)

END OF QUESTION PAPER

TAX RATE SCHEDULE FOR PERSONAL INCOME

	Chargeable 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 15,000	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 ---

LISTS OF FORMULA

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. $S = R\left[\frac{(1+i)^n - 1}{i}\right]$
11. $A = R\left[\frac{1-(1+i)^{-n}}{i}\right]$	12. SP = C + M
13. GP = OE + NP.	14. NP = LP $(1- d_1)(1- d_2)...(1- d_n)$
15. $r = \frac{2mI}{B(n+1)}$	16. $r = 1 - \sqrt[n]{\frac{S}{C}}$
17. $BV_n = C(1-r)^n$	18. OPB = $(R\times k) - I\left[\frac{k(k+1)}{n(n+1)}\right]$