



**UNIVERSITI TEKNOLOGI MARA
FINAL EXAMINATION**

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| COURSE | : | BUSINESS MATHEMATICS |
| COURSE CODE | : | MAT402 |
| EXAMINATION | : | JUNE 2019 |
| 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
 - iii) a one-page Appendix 2
 - 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

A mall gives a lucky draw number to all customers who made a purchase more than RM250 in one receipt. The lucky draw numbers given to the customers will follow the sequence:

1,000 , 1,500 , 2,000 , ...

What is the lucky draw number received by the 900th customer?

(5 marks)

QUESTION 2

Henry deposited a sum of money RM12,000 in a bank that paid simple interest rate of $r\%$ per annum. He kept the money in the bank for 95 days. The balance on the 6th of June 2018 was RM12,321.50. Find

a) the date he deposited the money using approximate time.

(3 marks)

b) the interest rate, $r\%$ using exact simple interest.

(4 marks)

QUESTION 3

a) A promissory note dated 1st of February 2018 reads, "89 days after date, I promise to pay RM4,000 with an interest rate at 6% per annum". Using the Banker's Rule, find the **maturity date** and **maturity value** of the note.

(7 marks)

b) Calculate the amount of discount of a loan RM2,400 due in 3 years at a bank discount rate of 4% per annum.

(4 marks)

QUESTION 4

Kamil invests RM30,000 into an account that paid 7% compounded semi-annually. On the same day, he invests another RM50,000 in a mutual fund at 11% compounded every 4 months. At the end of 5 years, find

a) the total amount of investment.

(5 marks)

b) the total amount of interest earned.

(3 marks)

QUESTION 5

Salma deposits RM350 into a bank account at the end of every month. The first deposit was made on her 25th birthday. The last deposit will be made on her 50th birthday. The bank offers 5.5% interest compounded monthly.

- a) How much will be in her account when she reaches the age of 50? (5 marks)
- b) If on her 45th birthday, the bank offers her a different rate of interest, which is 7% compounded quarterly, what will be the accumulated value at the end of the investment period? (9 marks)

QUESTION 6

- a) A cash price of a camera is RM7,800. Ahmad bought the camera by installment scheme and paid a down payment of RM2,500. The balance is paid monthly for two and half years. If the interest rate charged is 9% per annum on declining balance, calculate the monthly payment. (8 marks)
- b) Sandy bought a television through an installment plan. The cash price of the television is RM1,200. She paid RM250 as a down payment. The balance was settled by making 15 monthly payments of RM71. If the interest rate charged was 9.5% per annum on the original balance, find
- i) the installment price. (5 marks)
- ii) the outstanding balance after the 10th payment using the Rule of 78. (3 marks)

QUESTION 7

A company bought 100 printers for RM35,500. The company wanted a gross profit and net profit of 20% and 15% of the selling price, respectively. Find

- a) the selling price of a printer. (4 marks)
- b) the minimum selling price for each printer to avoid any loss to the company. (7 marks)

QUESTION 8

A department store lists a product for RM200 with a discount of 20%. To improve the sales, an additional rate of discount, $d\%$ is offered so that the net price is reduced to RM120. Cash discount of 5% is given if payment is made within 10 days from the date of purchase.

- a) Find the additional rate of discount, $d\%$.
(5 marks)
- b) If payment is made after 5 days from the date of purchase, find the amount of payment.
(3 marks)

QUESTION 9

A cloth dryer costs RM11,500. It is estimated to last for 6 years and has a salvage value of RM2,500. Find

- a) the book value of the cloth dryer at the end of the 4th year using the straight line method.
(3 marks)
- b) the amount of depreciation of the cloth dryer for the 4th year using declining balance method.
(5 marks)

QUESTION 10

Hanafiah works at a private sector with an annual income of RM78,000. He has four children and his wife is not working. His eldest daughter is studying in a university. The rest of his children are still schooling in a secondary school. His expenditures (RM) for 2017 are as follows:

| Item | Expenditure |
|------------------------|-------------|
| EPF | 4,500 |
| Life Insurance Premium | 1,000 |
| Books | 1,200 |
| Parents Medical Bills | 5,500 |
| Zakat | 200 |

- Assess his tax payable for the year 2017.
(12 marks)

END OF QUESTION PAPER

TAX RATE SCHEDULE FOR PERSONAL INCOME

| | Taxable Income (RM) | Rate | Tax (RM) |
|--------------|------------------------|------|-------------|
| On the first | 2,500 | 0 | 0 |
| On the next | 2,500 | 0 | 0 |
| On the first | 5,000 | | 0 |
| On the next | 15,000 | 1 | 150 |
| On the first | 20,000 | | 150 |
| On the next | 15,000 | 5 | 750 |
| On the first | 35,000 | | 900 |
| On the next | 15,000 | 10 | 1,500 |
| On the first | 50,000 | | 2,400 |
| On the next | 20,000 | 16 | 3,200 |
| On the first | 70,000 | | 5,600 |
| On the next | 30,000 | 21 | 6,300 |
| On the first | 100,000 | | 11,900 |
| On the next | 150,000 | 24 | 36,000 |
| On the first | 250,000 | | 47,900 |
| On the next | 150,000 | 24.5 | 36,750 |
| On the first | 400,000 | | 84,650 |
| On the next | 200,000 | 25 | 50,000 |
| On the first | 600,000 | | 134,650 |
| On the next | 400,000 | 26 | 104,000 |
| On the first | 1000,000 | | 238,650 |
| On the next | Every RM after | 28 | |

LIST OF FORMULAE

| | |
|---|---|
| $T_n = a + (n - 1)d$ | $S_n = \frac{n}{2}[2a + (n - 1)d]$ |
| $T_n = ar^{n-1}$ | $S_n = \frac{a(r^n - 1)}{r - 1}$ |
| $S = P(1 + rt)$ | Proceeds = $S(1 - dt)$ |
| $r = \frac{d}{1 - dt}$ | $d = \frac{r}{1 + rt}$ |
| $S = P(1 + i)^n$ | $r_e = (1 + i)^m - 1$ |
| $S = R \left[\frac{(1 + i)^n - 1}{i} \right]$ | $A = R \left[\frac{1 - (1 + i)^{-n}}{i} \right]$ |
| $SP = C + M$ | $GP = OE + NP$ |
| $NP = LP(1 - d_1)(1 - d_2) \dots (1 - d_n)$ | $r = \frac{2mI}{B(n + 1)}$ |
| $r = 1 - \sqrt[n]{\frac{S}{C}}$ | $BV_n = C(1 - r)^n$ |
| $OPB = (R \times k) - I \left(\frac{k(k + 1)}{n(n + 1)} \right)$ | |