



**UNIVERSITI TEKNOLOGI MARA
FINAL ASSESSMENT**

COURSE	:	BUSINESS MATHEMATICS
COURSE CODE	:	MAT112
EXAMINATION	:	JULY 2022
TIME	:	3 HOURS

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of five (5) questions.
2. Answer ALL questions. Start each answer on a new page.
3. Please check to make sure that this assessment pack consists of :
 - i) the Question Paper
 - ii) a one – page Appendix (List of Formula)
4. 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

QUESTION 1

- a) On 23 February 2020, Alisha deposited RM5,500 in an account that offered a simple interest rate of 4.5% per annum. Find the amount received if Alisha closed her account on 25 June 2020 using the exact time and exact simple interest. (5 marks)
- b) A finance company charged a loan of RM3,000 at a simple interest of 12% per year. If the interest paid was RM972, how long was the term of the loan? (3 marks)
- c) On 10 January 2022, Zafran received a promissory note from Orchid with 9% simple interest. The note matured on 11 June 2022 with maturity value of RM7,266. After keeping the note for 52 days, Zafran then discounted the note at a bank and received RM7,130.77.
- i) Determine the maker of the note. (1 mark)
- ii) Calculate the face value of the note. (5 marks)
- iii) Find the discount date. (2 marks)
- iv) Calculate the discount rate. (2 marks)
- v) Find the simple interest rate that is equivalent to the discount rate in (iv). (2 marks)

QUESTION 2

- a) Izzati Syuhada invested RM15,000 in an investment scheme for 12 years. The investment rate offered was 4.5% compounded quarterly for the first seven years and 6% compounded every two months for the rest of the periods. Find the future value of the investment. (6 marks)
- b) Five years ago, Lian saved RM X into an account that offered an interest rate of 4.38% compounded monthly. Find the value of X if now the total amount in her account is RM2,426.45. (4 marks)

- c) Rita received an invoice dated 29 Mac 2021 with the amount of RM5,826 including transportation cost of RM200. The trade discounts given were 16% and 9% and the cash discount terms were 5/8, 3/17, and n/30. Find
- i) the single discount rate that is equivalent to the series of trade discounts given. (2 marks)
 - ii) the last date to receive a 3% cash discount. (3 marks)
 - iii) the amount to be paid if she made a payment on 5th April 2021. (5 marks)

QUESTION 3

- a) Rani invests RM X every six months into a fund that pays 12% compounded semi-annually. Find the value of X if the fund was accumulated to RM5,745.66 in 4 years and 6 months. (4 marks)
- b) Ameena borrowed a certain sum of money from a financial institution that charged 4.5% compounded monthly. She has to pay RM725 every month for 9 years. Calculate the initial value of the loan. (4 marks)
- c) Nadhirah needs to pay RM168.28 every month for a loan of RM7,000 from XYZ Bank at 7.2% compounded monthly.
- i) Calculate the number of equal payments required. (6 marks)
 - ii) If Nadhirah failed to pay the first five monthly payments, how much should she pay on the sixth instalment to settle the outstanding arrears? (6 marks)

QUESTION 4

- a) A retailer bought a rice cooker at RM89. The rice cooker was sold with a gross profit of 35% based on the selling price. Find the selling price of the rice cooker. (4 marks)

- b) Music X Center sold a grand piano for RM21,199. If the operating expenses were 27% on cost and the net price was 15% on cost, find the cost of the piano. (4 marks)
- c) A grocer bought 45 boxes of plum at RM18 per box and 20 boxes of grapes at RM12.50 per box. The operating expenses incurred were 10% of the total cost. If the grocer wants a net profit of 25% based on the total selling price, find
- i) the total selling price. (6 marks)
- iii) the maximum percentage of mark down that could be offered without incurring any loss. (6 marks)

QUESTION 5

- a) Nizam borrowed some amount of money from Barjaya Bank to purchase a new car. He has to repay RM1,200 monthly for 5 years. If the bank charged an interest rate at 5% per annum on the original balance, calculate the amount borrowed. (4 marks)
- b) The cash price of a handphone is RM3,500. On an instalment plan, RM500 is required as a down payment followed by monthly payments for 2 years. If the interest rate charged is 7% on the reducing balance, find
- i) the interest charged using the Constant Ratio formula. (2 marks)
- ii) the monthly payment. (2 marks)
- iii) the instalment price of the handphone. (2 marks)
- c) An asset has a scrap value of RM9,500 at the end of 7 years and the book value of RM12,000 at the end of 5 years. Using the straight-line method, find the cost of the machine. (5 marks)
- d) Secret Bakery bought a mixer at the cost of RM12,500. It is expected to last for eight years and has a salvage value of RM4,500. Calculate the book value of the mixer after four years by using declining balance method. (5 marks)

END OF QUESTION PAPER

APPENDIX

LIST OF FORMULA

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