UNIRAZAK
UNIVERSITI TUN ABDUL RAZAK

FINAL EXAMINATION

MARCH 2023

COURSE TITLE	**BUSINESS MATHEMATICS**
COURSE CODE	**BMAT2213B**
DATE/DAY	**20 JUNE 2023 / TUESDAY**
TIME/DURATION	**01:00 PM - 03:00 PM / 02 Hour(s) 00 Minute(s)**

INSTRUCTIONS TO CANDIDATES :

1. Please read the instruction under each section carefully.
2. Candidates are reminded not to bring into examination hall/room any form of written materials or electronic gadget except for stationery that is permitted by the Invigilator.
3. Students who are caught breaching the Examination Rules and Regulation will be charged with an academic dishonesty and if found guilty of the offence, the maximum penalty is expulsion from the University.

(This Question Paper consists of **5** Printed Pages including front page)

*****DO NOT OPEN THE QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO*****

There are SEVEN (7) questions in this section. Answer ALL questions in the answer booklet provided. [100 MARKS]

1. Annie bought a Mercedes GLC250 for RM180 000.The depreciation was RM12 000 in the 1st year, RM10 000 in the 2nd year and RM8 000 for the 3rd year and so on. Find

   a) the depreciation on the 6th year (7 marks)

   b) the accumulated depreciation for the first 6 years. (8 marks)

2. Four years ago, Khadijah deposited RM6 800 in an account that gave 4.55% simple interest per annum. Find

   a) The total interest earned (4 marks)

   b) The total accumulated amount today (6 marks)

3. For the following questions:

   a) Find the future value of RM2 999 invested for 30 months at 6% compounded monthly. (7 marks)

   b) Find the sum to be invested now at 6% compounded monthly so as to accumulate RM8 888 in three years. (8 marks)

4. RM200 was saved every month for four years in an account that pays 6% compounded monthly. Find the accumulated values if the interest rate was changed to 8% compounded monthly after 1 year. (15 marks)

5. An invoice dated 10th May 2020 for RM8 200 inclusive of handling charges of RM70 was offered trade discounts of 9% and 5% and cash discount terms of 8/10,3/20 and n/30. Find

   a) the net price after trade discount (7 marks)

   b) the amount paid on 23rd May 2020 (8 marks)

6. A retailer buys a set of plates for RM500.Operating expenses incurred during the sale of the plates are 10% of the cost price. If the retailer makes a 25% net profit based on the cost, find

   a) the retail price (4 marks)

   b) the gross profit (3 marks)

   c) the net profit (3 marks)

   d) the breakeven price (4 marks)

   e) the maximum markdown that could be offered to customers so that there is no profit or loss (6 marks)

7. Given

   a) A bank discounts a RM10 000 note due in three months, using a bank discount rate of 5%. Find the equivalent simple interest rate charged by the bank. (5 marks)

   b) Khairul bought a television set with cash price of RM6 000.He paid a 10% down payment and the balance was settled by making 24 monthly payments. If the interest was 8% per annum on the original balance. Find

      i. the instalment price of the television (2 marks)

      ii. the monthly payment (3 marks)

***** END OF QUESTION PAPER *****

List of Formulas

Sequence

$T_n = a + (n-1)d$

$S_n = \frac{n}{2}[2a + (n-1)d]$

$T_n = ar^{n-1}$

$S_n = \frac{a(r^n-1)}{r-1}, r > 1, S_n = \frac{a(1-r^n)}{1-r}, r < 1$

Simple Interest

$S = P(1+rt)$

$P = S(1+rt)^{-1}$

Compound Interest

$S = P(1+rt)^n$

$1 + r = (1 + \frac{k}{m})^m$

$P = S(1+rt)^{-1}$

Annuity

$S = R\left[\frac{(1+i)^n - 1}{i}\right]$

$A = R\left[\frac{1-(1+i)^{-n}}{i}\right]$

Trade and Cash Discounts

$NP = L(1-r)$

$r = 1 - (1-r_1)(1-r_2)\ldots$

Markup and Markdown

$RP = C + Markup$

$MD = OP - NP$

$R = C + NP + OE$

$BEP = C + OE$

List of Formulas

Promissory Notes

$D = Sdt$

$P = S\,(1 - dt)$

Instalment Purchases

$$A = R\left[\frac{1-(1+i)^{-n}}{i}\right]$$

$$r = \frac{2ml}{B(n+1)}$$

$$B = RN - I\left[\frac{N(N+1)}{n(n+1)}\right]$$

Depreciation

$$Annual\ Depreciation = \frac{Cost - Salvage\ value}{Useful\ Life}$$

$$r = 1 - \sqrt[n]{\frac{S}{c}}$$

$$S = \frac{n(n+1)}{2}$$