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UNIVERSITI TUN ABDUL RAZAK

FINAL EXAMINATION

NOVEMBER 2022

COURSE TITLE	**INTRODUCTION TO BUSINESS MATHEMATICS**
COURSE CODE	**RMAT1113/BMAT1113**
DATE/DAY	**15 FEBRUARY 2023 / WEDNESDAY**
TIME/DURATION	**02:30 PM - 04:30 PM / 02 Hour(s) 00 Minute(s)**

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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 **7** Printed Pages including front page)

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

There are SIX (6) questions. Answer all the questions.

(70 marks)

1. a. The sum of the first n terms of the progression $36,34,32,\ldots.0$. Find the value of n and the tenth term

(5 marks)

b. Find the sum of the first thirteen terms of the progression $40,20,10,5,\ldots\ldots$

(5 marks)

(10 marks)

2. a. Sharil invests RM6 690 at 5% simple interest in a bank. Find the amount in the account after eight years.

(5 marks)

b. A loan RMx is made on 20th April 2022 at a simple interest rate of 6% per annum. The accumulated amount on 23rd December 2022 is RM2 008. Using the Banker's Rule find the term of loan in days.

(5 marks)

(10 marks)

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3. Given two interest rates (a) 4.8% compounded monthly and (b) 5% compounded quarterly. Which of the two interest rates provides a better return.

(6 marks)

4. The cash price of a condominium is RM204 600.It is purchased through an instalment plan by making 10% down payment and a 360 equal monthly payments. The interest charged is 6.8% compounded monthly.
   a. Find the monthly payment

(5 marks)

   b. If immediately after 15 years the buyer decides to settle the loan by making a single payment, determine the value of the single payment

(9 marks)

(14 marks)

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5. John buys a new set of furniture worth RM8 260.He receives an invoice dated 26th October 2022 with a trade discount of 7% ,2% and is offered cash discount terms 3/15, 2/30, n/60.

   a. Calculate the single discount equivalent to the trade discounts given

   (5 marks)

   b. Calculate the last day to receive the 2% cash discount

   (5 marks)

   c. Determine the total amount if John pays the invoice on 17th November 2022

   (5 marks)

   d. If John pays RM4 000 on 3rd November 2022, much balance is due before the credit terms ends

   (5 marks)

(20 marks)

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6. An ACER laptop selling for RM8 000 cash can be purchased with a down payment of 25% down payment and 24 monthly payments at 10% per annum on the original balance. Find

a. the total interest payment

(3 marks)

b. the instalment price

(3 marks)

c. the monthly payment

(4 marks)

(10 marks)

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*** 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

$RP = C + Markup$

$MD = OP - NP$

$R = C + NP + OE$

$BEP = C + OE$

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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

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

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

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

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