# UNIRAZAK
## UNIVERSITI TUN ABDUL RAZAK

# FINAL EXAMINATION
# NOVEMBER 2022

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| **COURSE TITLE** | **BUSINESS MATHEMAICS** |
| **COURSE CODE** | **BMAT1113** |
| **DATE/DAY** | **13 FEBRUARY 2023 / MONDAY** |
| **TIME/DURATION** | **02:30 PM  -  04:30 PM  / 2 Hours** |

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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  **5**  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 in the Answer Booklet.**

**[70 MARKS]**

1. A machine costing RM100 000 depreciates RM10 000 for the first year, RM9 000 for the second year, RM8 000 for third year and so on until its annual depreciation is zero.

   Find :

   a. the depreciation for the 7$^{th}$ year                                        (5 marks)

   b. the total depreciation at the end of seven (7) years                         (5 marks)

2. a. Mr. Anwar invests RM10 000 at a simple interest of 4.5% per annum If the amount accumulates to RM10 046.25 on 10$^{th}$ September 2022, determine the date of investment using the Banker's Rule.                                              (5 marks)

   b. Find the interest earned if RM7 500 was invested in ASB for six years at 6.4% compounded quarterly.                                                       (5 marks)

3. Rozita has a debt of RM30 000 that is due in two years and another RM40 000 due in five years. If she decided to settle the two debts by making a single payment after three years, find the single payment.
   (Assuming money is worth 8% compounded annually)                              (10 marks)

4. a. A sofa is advertised for RM800 less 30% and 10%. Find

   i. the net price                                                                (3 marks)

   ii. the total discount                                                          (2 marks)

   b. Find the single discount equivalent to 20%.10% and 2%.                       (5 marks)

5. Zakariah saved RM200 every month for 5 years in an account that pays 6% compounded monthly. Find the accumulated value if the interest changed to 8% monthly after one year.

(15 marks)

6. A promissory note dated 15th August 2022 reads "two months from date" I promise to pay RM5 000 with interest at 8% per annum. Find the maturity date and maturity value.

(15 marks)

*** END OF QUESTION PAPER ***

## *List of Formulas*

Sequence

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

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

$T_n = ar^{n-1}$

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

Simple Interest

$S = P(1 + rt)$

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

Compound Interest

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

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

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

Annuity

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

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

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**

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

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

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

**Depreciation**

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

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

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