UNIRAZAK
UNIVERSITI TUN ABDUL RAZAK

FINAL EXAMINATION

MARCH 2024

COURSE TITLE **BUSINESS MATHEMATICS**

COURSE CODE **RMAT2213**

DATE/DAY **22 JUNE 2024 / SATURDAY**

TIME/DURATION **05:00 PM - 07:00 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 **6** 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. A Mercedes GLC250 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. (7 marks)

b) the total depreciation at the end of seven (7) years. (8 marks)

2. Solve the following:

a) Khatijah invests RM20 000 at a simple interest of 4.5% per annum. If the amount accumulates to RM20 046.25 on 10^{th} September 2022, determine the date of investment using the Banker's Rule. (7 marks)

b) Find the interest earned if RM9 500 was invested in Maybank for seven (7) years at 9.5% compounded quarterly. (8 marks)

3. Munirah has a debt of RM20 000 that is due in three years and another RM50 000 due in five years. If she decided to settle the two debts by making a single payment on the fourth year, find the single payment.
(Assuming money is worth 10% compounded annually) (15 marks)

4. Solve the following:

a) A sofa set is advertised for RM800 less 20% and 8%. Find
i. the net price. (3 marks)

ii. the total discount. (2 marks)

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

5. Jawan saved RM500 every month for 5 years in an account that pays 9% compounded monthly. Find the accumulated value if the interest changed to 7% monthly after one year.
(20 marks)

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

7. Four years ago, Aisyah 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)

*** 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

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

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

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

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

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

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

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