UNIRAZAK
UNIVERSITI TUN ABDUL RAZAK

FINAL EXAMINATION

MARCH 2024

COURSE TITLE **INTRODUCTION TO BUSINESS MATHEMATICS**

COURSE CODE **RMAT1113**

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 Proton X50 car costing RM80 000 depreciates RM10 000 for the first year, RM8 000 for the second year, RM6 000 for third year and so on until its annual depreciation is zero. Find

a) the depreciation for the 5th year. (7 marks)

b) the book value of six (6) years. (8 marks)

2. Solve the following:

a) Dr. John invests RM20 000 at a simple interest of 6% per annum. Find

i. the total interest earned after 2 years 6 months. (3 marks)

ii. the accumulated amount end of 7 years. (4 marks)

b) Find the interest earned if 20 000 was invested in Swiss Bank for seven (7) years at 9% compounded semi-annually. (8 marks)

3. Solve the following:

a) Find the future value whereby RM600 is invested every year for eight (8) years at 12% compounded monthly. (7 marks)

b) Find the present value whereby RM500 is paid every month for 2 years at 5% compounded quarterly. (8 marks)

4. Solve the following:

a) A dinning table is advertised for RM1800 less 10% and 5%. Find

i. the net price. (3 marks)

ii. the total discount. (2 marks)

b) Find the single discount equivalent to 25%,15% and 5%. (5 marks)

5. A retailer buys a computer table set for RM1800. Operating expenses incurred during the sale of these computer table is 20% of the cost price. If the retailer makes a 15% 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)

6. A promissory note dated 15th August 2022 reads "two months from date" I promise to pay RM5 000 with interest at 5% per annum. Find the maturity date and maturity value. (15 marks)

7. Siti Aisyah deposited RM10 000 in an account that gave 7% compound interest quarterly for three (3) years. Find

a) the total interest earned. (4 marks)

b) the total accumulated amount. (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

$RP = C + Markup$

$MD = OP - NP$

$R = C + NP + OE$

$BEP = C + OE$

Promissory Notes

$D = Sdt$

$P = S(1 - dt)$

Instalment Purchases

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

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

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

List of Formulas

Depreciation

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

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

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