UNIVERSITI UTARA MALAYSIA
FINAL EXAMINATION
FIRST SEMESTER SESSION 2008/2009

CODE/COURSE: QQM3063/ MATEMATIK PERNIAGAAN
DATE: 11 NOVEMBER 2008 (TUESDAY)
TIME: 9:00 – 11.30 A.M. (2½ HOURS)
VENUE: DSB KOLEJ TRADE WIND

INSTRUCTIONS:
1. This book script contains TEN (10) questions in SIX (6) printed pages excluding the cover page and appendix.
2. An appendix is given on page 7.
3. Answer ALL the questions in the space provided.

MATRIC NO: ___________________________________________ (in words) (in numbers)
IDENTITY CARD/PASSPORT NO: _________________________
LECTURER: ___________________________________________
GROUP: □ TABLE NO.: □

DO NOT OPEN THE PAGE UNTIL YOU ARE TOLD TO DO SO
QUESTION 1 (10 MARKS)

a) An arithmetic progression has \( t_1 = 8, t_n = 96, S_n = 624 \). Find \( n \) and \( d \). (5 marks)

b) A geometric progression has \( t_1 = 3, r = 2, t_n = 384 \). Find \( n \) and \( S_n \). (5 marks)

QUESTION 2 (8 MARKS)

a) A couple borrows RM3000 for 260 days at 13.25%. What amount must they repay? (3 marks)
b) A bank charges 15% bank discount on short-term loans. A borrower needs RM1500 cash, to be repaid with interest in 7 months. What size of loan should he ask for, and how much interest will he pay? (5 marks)

QUESTION 3 (7 MARKS)

An obligation of RM1000 is due in 10 months with interest at 9%. At 12% simple interest, find the value of obligation

i) at the end of 5 month (5 marks)

ii) at the end of 12 month (2 marks)

QUESTION 4 (8 MARKS)

Find:
a) the simple interest and accumulated value on RM5000 for 5 years at 10% interest. (4 marks)
b) the compound interest on RM5000 for 5 years at 10% compounded quarterly at the end of the year if the conversion period starts at the beginning of the year.
(4 marks)

QUESTION 5 (11 MARKS)

a) Find the compound interest on RM3000 at \( j_6 = 6\% \) for 3 years.
(4 marks)

b) How much would have be deposited today in an investment fund paying \( j_4 = 8.5\% \) to have RM8000 in 3 years’ time?
(4 marks)

c) A used car sells for RM10,000. Amin wishes to pay it in 18 monthly installments. If 18% compounded monthly is charged, find the size of the monthly payment if the first payment due on the day of purchase.
(3 marks)
QUESTION 6 (4 MARKS)

a) Find the accumulated value of RM300 at the end of 5 years at 9% simple discount.  

(2 marks)

b) Chuah borrows RM1000 for 120 days from a bank with 12% discount rate. How much money does Chuah receives?  

(2 marks)

QUESTION 7 (8 MARKS)

a) Mat deposits RM300 at the end of every month into a saving account that pays interest at \( r_{12} = 12\% \). How much money is in his account at the end of 5 years?  

(4 marks)

b) Ana wants to make sure that her saving is RM100, 000 in 20 years time from now. If she deposits every 6 months, what is the size every deposit given that the interest is 9% compounded semiannually.  

(4 marks)
QUESTION 8 (11 MARKS)

a) A property worth RM235,000 is sold for 10% down and equally monthly payments for the next 25 years. Find the monthly payment if the interest rate is $j_1 = 6\%$.

(6 marks)

b) A company wishes to have RM200,000 in a fund at the end of 5 years. What deposit at the end of each month must they make, if the fund pays interest at 10% compounded quarterly?

(5 marks)

QUESTION 9 (7 MARKS)

To pay off the purchase of a car, a woman gets a RM55,000 5 years bank loan at 15% compounded quarterly. She pays RM15,000 down payment and pays equal monthly payments for 60 months.

a) Find the size of the monthly payment.

(3 marks)
b) Construct an amortization schedule for the first 3 lines. (4 marks)

QUESTION 10 (6 MARKS)

A couple wants to save RM200,000 over the next 10 years so that they can use the fund for their child education expenses.

a) How much must be deposited at the end of each year if their money earns interest at \( j_i = 6\% \)? (2 marks)

b) Construct a sinking-fund schedule for the first 3 lines. (4 marks)

- END OF QUESTIONS -
APPENDIX – LIST OF FORMULA

Arithmetic sequence:
\[ t_n = a + (n - 1)d \]
\[ S_n = \frac{n}{2} (a + t_n) \]

Geometric sequence:
\[ t_n = ar^{n-1} \]
\[ S_n = a \left( \frac{1 - r^n}{1 - r} \right) \] or \[ S_n = a \left( \frac{r^n - 1}{r - 1} \right) \]

Simple Interest:
\[ I = Prt \]
\[ S = P (1 + rt) \]

Simple Discount:
\[ P = S (1 - dt) \]
\[ r = \frac{d}{1 - dt} \]

Annuity-immediate:
\[ A = Ra_n = R \left[ \frac{1 - (1 + i)^{-n}}{i} \right] \]
\[ S = Rs_n = R \left[ \frac{(1+i)^n - 1}{i} \right] \]

Annuity-due:
\[ A = R\ddot{a}_n = R \left( 1 + a_{n-1} \right) \]
\[ S = R\ddot{s}_n = R \left( s_{n+1} - 1 \right) \]