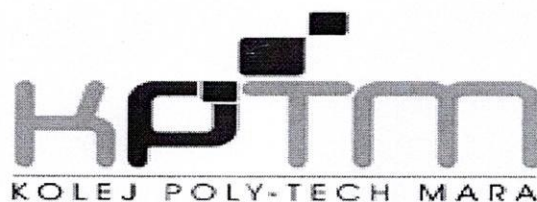


CONFIDENTIAL



FINAL EXAMINATION

COURSE	:	QUANTITATIVE TECHNIQUES
COURSE CODE	:	TBM1074
DURATION	:	2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. This question paper consists of **ELEVEN (11)** questions.
2. Answer ALL questions in the Answer Booklet provided.
3. Please check to make sure that this examination pack consists of :
 - i) The Question Paper
 - ii) An Answer Booklet
 - iii) Appendix 1
4. Do not bring any material into the examination hall unless permission is given by the invigilator.
5. Please write your answer using a ball-point pen.
6. The use of electronic calculator is allowed.

MYKAD NO : _____

ID. NO. : _____

LECTURER : _____

SECTION : _____

DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO

The question paper consists of 3 printed pages

MAR/C/TBM1074

Short Answer**1. (4 points)**

The second term and the fifth term of an arithmetic sequence are 12 and 30 respectively. Find the common difference and the first term.

2. (3 points)

Given a sequence: 2, 4, 8, ..., 2048. Find the number of terms in this sequence.

3. (5 points)

Seven years ago, a sum of money was deposited in a savings account which gave a 12% simple interest. The accumulated amount today is RM 16,560.

- a. Find the value of the initial deposit. (2 points)
- b. How many years from today will it take the savings to amount to RM 21,960?
(3 points)

4. (3 points)

On 4 June 2016, Fahmi saved RM 2000 in an account that offered simple interest rate of 10% per annum. Find the amount in his account on 1 December 2016 using Banker's Rule.

5. (7 points)

Maimunah deposited RM 7,700 in an account that offers $k\%$ compounded quarterly. After 5 years, the amount accumulated was RM 10,118.31

- a. Find the interest rate, k (4 points)
- b. Find the accumulated amount if she deposits the money for 7 years.
(3 points)

6. (4 points)

Khadijah has two debts, RM 5,500 due in three years and another RM 8,700 due in seven years. If Khadijah wished to settle the debts in $4\frac{1}{2}$ years from now, find the single payment if money is worth 6.5% compounded semi-annually.

7. (4 points)

A project requires an initial investment of RM 300 000 and is expected to generate the following net cash inflows.

Year	1	2	3	4
Cash Inflow	RM 120 000	RM 95 000	RM 88 000	RM 78 000

Find the net present value of the project if the discount rate is 12% per annum.

8. (6 points)

The cash price of a townhouse is RM 275,000. It can be purchased through an instalment plan by making a down payment of 5% followed by 300 equal monthly payments. The interest charged is 3.6% compounded monthly.

- Find the amount of down payment paid by the buyer. (1 point)
- Find the monthly payment. (5 points)

9. (4 points)

Fazira deposited RM 300 into an investment scheme every three months for 9 years and 9 months at 7.5% compounded quarterly. Find the total amount of her investment at the end of the investment period.

10. (10 points)

Find the derivative for

- $y = 3x^3 - 4x^2 + 6x$ (2 points)
- $y = (2x - 3)(x^3 + 5)$ (4 points)
- $y = \frac{6x}{4 + 3x}$ (4 points)

11. (10 points)

A furniture manufacturer find that the average cost function, x wooden chairs per week and the total revenue function are given as

$$AC(x) = \frac{800}{x} + 20$$

$$R(x) = 100x - 0.4x^2$$

respectively, Find

- the total revenue when 30 units are produced and sold. (2 points)
- the total cost function. (3 points)
- the total profit function. (3 points)
- the total profit when 100 units are sold. (2 points)

APPENDIX 1

$$1. \quad T_n = a + (n-1)d$$

$$3. \quad T_n = ar^{n-1}$$

$$5. \quad S = P(1+rt)$$

$$7. \quad S = P(1+i)^n$$

$$9. \quad PV = P_n \left[\frac{1}{(1+i)^n} \right]$$

$$11. \quad A = R \left[\frac{1 - (1+i)^{-n}}{i} \right]$$

$$13. \quad P(x) = R(x) - C(x)$$

$$15. \quad y = u.v, \quad \frac{dy}{dx} = vu' + uv'$$

$$17. \quad y = u^n, \quad \frac{dy}{dx} = nu^{n-1} \times u'$$

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

$$4. \quad S_n = \frac{a(r^n - 1)}{r - 1}$$

$$6. \quad I = Prt, \quad S = P + I$$

$$8. \quad r = \left(1 + \frac{k}{m} \right)^m - 1$$

$$10. \quad S = R \left[\frac{(1+i)^n - 1}{i} \right]$$

$$12. \quad R(x) = px$$

$$14. \quad y = x^n, \quad \frac{dy}{dx} = nx^{n-1}$$

$$16. \quad y = \frac{u}{v}, \quad \frac{dy}{dx} = \frac{vu' - uv'}{v^2}$$