



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

MATHEMATICS

MATHEMATICS

MARKS: 35
FINANCE WEEKLY TEST
TIME : 45 MINS

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 3 questions.
2. Answer ALL the questions.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Answers only will NOT necessarily be awarded full marks.
5. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
6. If necessary, round off answers to TWO decimal places, unless stated otherwise.
7. An information sheet with formulae is included at the end of the question paper.
8. Write neatly and legibly.

QUESTION 1 [13 marks]

- 1.1. Thapelo Morena bought a new car that is currently worth R30 000. The value of the car depreciates annually at a rate of 9% p.a. on the reducing balance method. Calculate the value of the car after 7 years. (2)
- 1.2 Carol needs R100 000 in five years' time for her university studies. She decides to get a part-time job to save the amount. How much should she deposit monthly in an account that earns 10.05 % interest p.a. compounded monthly. Her first payment begins immediately (at the beginning of the first month) and her last payment is at the end of the last month. (4)
- 1.3 When Mr Euclidean retires, he will have R2 500 000 available as a life annuity. Calculate how long he will be able to withdraw R20 000 a month from this fund if it earns interest at 8% pa compounded monthly. (4)
- 1.4 A loan must be repaid by means of 70 monthly instalments of R2000 each, starting one month after the loan is granted. Interest is fixed at 18% per annum, compounded monthly. Determine the outstanding balance of the loan after 5 years. (3)

QUESTION 2 [15 MARKS]

Mr Gady takes out a bank loan of R600 000 to pay for his new car. He repays the loan with monthly instalments of R9 000, starting one month after the granting of the loan. The interest rate is 13% per annum, compounded quarterly.

- 2.1 Show that the effective interest rate is 12,86% p.a. compounded monthly. (3)
- 2.2 How many instalments of R9 000 must be paid? (5)
- 2.3 What will the final payment be? (5)
- 2.4 What did the car cost Jake in total by the time it is paid off? (2)

[15]

QUESTION 3 [7 MARKS]

- 3.1 Convert an interest rate of 14% p.a. compounded monthly to an effective interest rate per annum. (2)
- 3.2 Skomota starts saving for retirement and pays R800 into a savings account each month. Immediately after he makes his last payment he has R7003007,22 in his retirement fund. He receives an interest rate of 16% per annum compounded monthly. Determine the number of payments that he made. (5)

*******THE END******* **GRAND TOTAL =35 MARKS*******

INFORMATION SHEET

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$A = P(1 + ni)$$

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

$$A = P(1 - ni) \quad A = P(1 - i)^n$$

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

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

$$T_n = ar^{n-1}$$

$$S_n = \frac{a(r^n - 1)}{r - 1} ; r \neq 1$$

$$S_\infty = \frac{a}{1 - r} ; -1 < r < 1$$

$$F = \frac{x[(1 + i)^n - 1]}{i}$$

$$P = \frac{x[1 - (1 + i)^{-n}]}{i}$$

$$f'(x) = \lim_{h \rightarrow 0} \left(\frac{f(x + h) - f(x)}{h} \right)$$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$M\left(\frac{x_1 + x_2}{2} ; \frac{y_1 + y_2}{2}\right)$$

$$y = mx + c$$

$$y - y_1 = m(x - x_1)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad m = \tan\theta$$

$$(x - a)^2 + (y - b)^2 = r^2$$

$$\text{In } \Delta ABC: \quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc \cdot \cos A$$

$$\text{Area } \Delta ABC = \frac{1}{2} ab \cdot \sin C$$

$$\sin(\alpha + \beta) = \sin\alpha \cdot \cos\beta + \cos\alpha \cdot \sin\beta$$

$$\cos(\alpha + \beta) = \cos\alpha \cdot \cos\beta - \sin\alpha \cdot \sin\beta$$

$$\sin(\alpha - \beta) = \sin\alpha \cdot \cos\beta - \cos\alpha \cdot \sin\beta$$

$$\cos(\alpha - \beta) = \cos\alpha \cdot \cos\beta + \sin\alpha \cdot \sin\beta$$

$$\cos 2\alpha = \begin{cases} \cos^2 \alpha - \sin^2 \alpha \\ 1 - 2 \sin^2 \alpha \\ 2 \cos^2 \alpha - 1 \end{cases}$$

$$\sin 2\alpha = 2 \sin\alpha \cdot \cos\alpha$$

$$\bar{x} = \frac{\sum fx}{n}$$

$$\sigma^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n}$$

$$P(A) = \frac{n(A)}{n(S)}$$

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$\hat{y} = a + bx$$

$$b = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sum (x - \bar{x})^2}$$