



**PAMIBIA UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

**FACULTY OF COMMERCE, HUMAN SCIENCES AND EDUCATION**

**HAROLD PUPKEWITZ GRADUATE SCHOOL OF BUSINESS**

<b>QUALIFICATION : DIPLOMA IN BUSINESS PROCESS MANAGEMENT</b>	
<b>QUALIFICATION CODE: 06DBPM</b>	<b>LEVEL: 6</b>
<b>COURSE CODE: ITM511C</b>	<b>COURSE NAME: INTRODUCTION TO MATHEMATICS 1A</b>
<b>SESSION: OCTOBER 2025/ NOVEMBER 2025</b>	<b>PAPER: THEORY (PAPER 2)</b>
<b>DURATION: 3 HOURS</b>	<b>MARKS: 100</b>

<b>SECOND/SUPPLEMENTARY OPPORTUNITY EXAMINATION QUESTION PAPER</b>	
<b>EXAMINER(S)</b>	<b>Mrs. H.Y. NKALLE</b>
<b>MODERATOR:</b>	<b>Mrs. A.N. SAKARIA</b>

<b>INSTRUCTIONS</b>
<ol style="list-style-type: none"><li>1. Answer ALL the questions.</li><li>2. Read all the questions carefully before answering.</li><li>3. Number the answers clearly</li></ol>

**THIS QUESTION PAPER CONSISTS OF \_4\_ PAGES (Including this front page)**

**Section A: Multiple choice Questions (3 Marks per Question [30 Marks]).**

1.1 Evaluate  $20 \div 4 + 3 \times (5 - 2) - 1$ .

- (a) 12
- (b) 13
- (c) 14
- (d) 15

1.2 Simplify the fraction  $\frac{2}{3} + \frac{3}{4} - \frac{1}{6}$

- (a)  $\frac{5}{6}$
- (b)  $\frac{7}{6}$
- (c)  $\frac{11}{12}$
- (d)  $\frac{13}{12}$

1.3 What is 25% of 80, Express the ratio of 2:5 as a percentage.

- (a) 20, 40%
- (b) 20, 50%
- (c) 25, 40%
- (d) 25, 50%

1.4 Simplify  $4^2 \times 8^{-1} \div 2^3$

- (a)  $2^{-3}$
- (b)  $2^{-2}$
- (c)  $2^{-1}$
- (d)  $2^0$

1.5 Simplify the surd  $\sqrt{45} + \sqrt{20} - \sqrt{5}$ .

- (a)  $4\sqrt{5}$
- (b)  $5\sqrt{5}$
- (c)  $3\sqrt{5}$
- (d)  $4\sqrt{5} - \sqrt{20}$

1.6 Evaluate  $\log_{10} 100 + \log_{10} 10$  and change  $3^4 = 81$  to logarithmic form.

- (a) 3,  $\log_3 81 = 4$
- (b) 3,  $\log_3 4 = 81$
- (c) 4,  $\log_3 81 = 4$
- (d) 4,  $\log_3 4 = 81$

1.7 Expand and simplify  $(2x + 1)(x - 3)$

- (a)  $2x^2 - 5x - 3$
- (b)  $2x^2 - 7x - 3$
- (c)  $2x^2 + 5x + 3$
- (d)  $2x^2 + 7x + 3$

1.8 Solve the linear equation:  $5x - 2 = 3x + 6$

- (a)  $x = 2$
- (b)  $x = 4$
- (c)  $x = 6$
- (d)  $x = 8$

1.9 Solve the inequality  $4x + 3 \leq 11$ , and identify the solution set.

- (a)  $x \leq 2$
- (b)  $x \leq 3$
- (c)  $x < 2$
- (d)  $x < 3$

1.10 For a geometric progression 3, 6, 12, ..., find the common ratio and sum of first 4 terms.

- (a) 2, 45
- (b) 2, 42
- (c) 3, 45
- (d) 3, 42

**Section B: True (T) or False (F) (2 marks per Question [10 Marks]).**

2.1 The surd  $\sqrt{12}$  can be simplified to  $2\sqrt{3}$ .

2.2  $\log_b a = \frac{1}{\log_a b}$  is one of the laws of logarithms.

2.3 The sigma notation  $\sum_{k=1}^n k = \frac{n(n+1)}{2}$ .

2.4 The law of surds states that  $\sqrt{a} \times \sqrt{b} = \sqrt{a+b}$ .

2.5 The complement of a set  $A$  in the universal set ( $\cup$ ) is the set of element in  $A$  that are not in  $\cup$ .

**SECTION C: Structured Questions.**

**Question 1**

1.1 Evaluate  $12 \div 3 + 5 \times 2 - (4 - 1)$ . [5]

1.2 Simplify the fraction  $\frac{3}{4} + \frac{5}{6} - \frac{1}{3}$ , leave the answer to 2 decimal places. [5]

1.3 Convert 45% to a fraction in simplest form. [2]

**Question 2**

2.1 Expand and simplify  $(x + 3)(x - 4) - 2x$ . [2]

2.2 solve the linear equation  $4x - 7 = 2x + 5$  [3]

2.3 Evaluate  $\log_{10} 1000 + \log_{10} 10$ . [3]

**Question 3**

3.1 Find the 5th term of the arithmetic progression where first term is 2 and common difference is 3. [5]

3.2 Factorise  $x^2 - 5x + 6$  and solve for  $x$ . [3]

3.3 Given sets  $A = \{1, 2, 3\}$ ,  $B = \{3, 4, 5\}$ ,  $U = \{1, 2, 3, 4, 5, 6\}$ . Find, [4 Marks, half mark each]

(a)  $A \cup B$

(b)  $A \cap B$

(c)  $A'$

3.4 Given  $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ ,  $B = \begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix}$ .

(a) Find  $AB$  [5]

(b)  $A^{-1}$  [7]

#### Question 4

4.1 Use cramer's rule to solve the following system of equations.  $3x + 2y = 11$  and  $x - y = 2$  [6]

4.2 Calculate simple Interest on N\$ 2000 at 5% p.a for 3 years. [3]

4.3 Find compound Interest on 10000 at 4% p.a compounded annually for 2 years. [3]

4.4 Find  $\sum_{k=1}^5 (2k + 1)$ . [4]

**End of Second/Supplementary opportunity Question paper.**