



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF HEALTH AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICS AND STATISTICS

QUALIFICATION: Bachelor of Regional and Rural Development, Bachelor of Communication, Bachelor of Technology Public Management, Bachelor of Supply Chain Management, Bachelor of Office Management and Technology, Bachelor of Natural Resources Management, Bachelor of Emergency Medical Care, Diploma In Vocational and Training, Bachelor of Hospitality Management	
QUALIFICATION CODE: 07BRRD,07BACO,07BPMN, 07BLSM,07BOMT,07BNTC,07BEMC,06DVET,07HMN	LEVEL: 4
COURSE CODE: BMS411S	COURSE NAME: BASIC MATHEMATICS
SESSION: JANUARY 2020	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100
SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mr R Mumbuu, Mr J Amunyela, Ms Y Shaanika, Mr F Ndinodiva,
MODERATOR:	Mrs S Mwewa
INSTRUCTIONS	
<ol style="list-style-type: none">1. Answer ALL the questions in answer booklet provided.2. Write clearly and neatly in blue/black ink.3. Number the answers clearly and note that marks will not be awarded for answers obtained without showing the necessary steps.	

PERMISSIBLE MATERIALS

1. Non-Programmable Calculator without the cover

THIS QUESTION PAPER CONSISTS OF 5 PAGES (Including this front page)

SECTION A

QUESTION 1[24 MARKS]

(Write down the letter of your best option for each question in the answer booklet provided)

- 1.1 The Lowest Common Multiple (LCM) of 5 , 12 and 15 is: [2]
A. 180 B.90 C.60 D. 5
- 1.2 Decompose 360 into a product of its prime factors [2]
A. $3^3 \times 3^2 \times 5$ B. $10 \times 6 \times 6$ C. $2^3 \times 3^2 \times 5$ D. $8 \times 9 \times 5$
- 1.3 The Highest Common Factor for 24, 25 and 48 is: [2]
A.5 B.3 C.1 D. 5400
- 1.4 The expression $(9 \times 10^{-2}) \times (5 \times 10^{-2})$ simplifies to (2 s.f) [2]
A. 15 B. 4.5×10^{-3} C. 4.5×10^3 D. 1.9×10^{-9}
- 1.5 The expression $2m(m - n) + 2m(-m + n)$ simplifies to: [2]
A. $4m^2 - 4mn$ B. 0 C. $4m$ D. 1
- 1.6 Factorize $ax^2 + xb^2$ [2]
A. $x(ax + b^2)$ B. $(x - b)(x + b)$
C. $(x - b)(x - b)$ D. $b(x - b)(x + b)$
- 1.7 Bernice is 5 years older than Vanessa, who is double the age Eunice. If their combined age is 55 years, find Vanessa's present age. [2]
A. 15 B. 25 C. 20 D. 10
- 1.8 Given $N = 2, U = 5, S = 3, T = -1$, the expression $NUST$ simplifies to: [2]
A. -2531 B. 9 C. 30 D. -30
- 1.9 The value of z in the equation $2 = \frac{4}{z+1}$ is? [2]
A. -3 B. 4 C. 1 D. 7
- 1.10 The original price of a bag is N\$500.The manager has agreed to give you a discount of 10% for paying cash. After the discount, you are expected to pay 1 0% VAT for the bag. How much will you pay altogether for the bag? [2]

- A. N\$1485. B. N\$135. C. N\$1500. D. N\$495

1.11 If $A = \{x: x \in Z, -3 \leq x \leq 3\}$ and $B = \{x: x \text{ is an integer}, x > 3\}$.

Determine the set $A \cap B$. [2]

- A. $\{0\}$ B. \emptyset C. $\{1,2,3\}$ D. $\{9\}$

1.12 10 women can grind a 100kg bag of Omahangu in in 6 hours. Assume that all women work at the same pace. How many women can grind the same bag in 2 hours? [2]

- A. 16 B. 15 C. 20 D. 30

SECTION B (show all your calculations)

QUESTION 2 (35 MARKS)

2.1 The mass of the earth is $\frac{1}{95}$ of the mass of the planet Saturn. The mass of the earth is 5.97×10^{24} kilograms. Calculate the mass of the planet Saturn, giving your answer in standard form, correct to 2 significant figures. [4]

2.2 Simplify each of the following expressions without using a calculator.

2.2.1 $\frac{1}{5} \div \frac{2}{5} \left(\frac{1}{2} - \frac{1}{4} \right) - 2 \frac{2}{3} \div \left(-\frac{2}{3} \right) \times \left(-\frac{1}{2} \right)$ [5]

2.2.2 $(x + y)(x - y)$ [3]

2.2.3 $a^2 - (a + b)^2 + 2ab + b^2$ [3]

2.3 At present a mother is 32 years older than her daughter. Six years ago she was three times as old as her daughter. Let x represent the present age of the daughter.

2.3.1 Write an equation in terms of x that represent the mother's present age. [3]

2.3.2 Solve the equation in 2.3.1 to determine the mother's present age? [4]

2.4 Solve the following equations

2.4.1 $2(a + 3) = -12$ [3]

2.4.2 $2x = \frac{1}{5}x + 3$ [3]

2.5 Factorize the following expressions completely

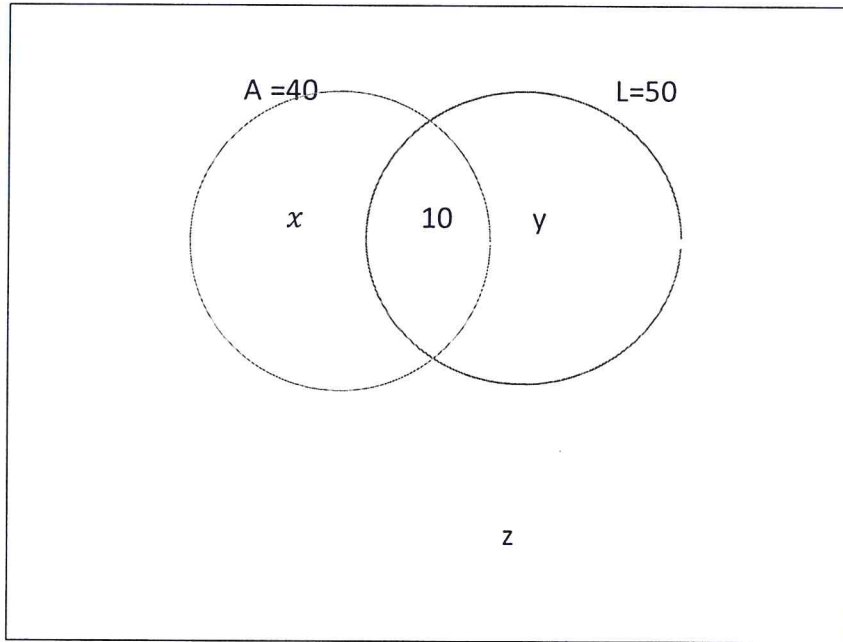
2.5.1 $4xy^2 + 16x^2y - 24x^3y^5$ [3]

2.5.2 $6as + 9ay - 4xs - 6xy$ [4]

QUESTION 3 (41 MARKS)

3.1 Given

S=110



3.1.1 Find the values of x , y and z in the Venn diagram above. [6]

3.2 Let $S = \{1,2,3,4,5,6,7,8,9,10,11,12,13\}$

$A = \{1,2,3,4,5\}$, $B = \{3,4,5,6,7\}$, $C = \{6,7,8,9\}$

Find

3.2.1 $A \cup C$ [3]

3.2.2 $A - B$ [2]

3.2.3 $A \cap B$ [3]

3.2.4 $\overline{A \cap B}$ [3]

3.3 Given that matrix $A = \begin{pmatrix} 4 & 6 \\ 3 & -6 \end{pmatrix}$, $B = \begin{pmatrix} 4 & 7 \\ -1 & 3 \end{pmatrix}$, $C = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$, $D = (2 \ 3)$

Find

3.3.1 AB [4]

3.3.2 $\det A$ [2]

3.3.3 $2A + 3B$ [6]

- 3.3.4 *DC* [4]
- 3.4 Angeline wants to buy a farm after 10 years. She wants to have N\$2000 000 at the time of purchase. How much should she invest now in a savings account that pays simple interest at 9.5%? [4]
- 3.5 Find the simple interest payable on a loan of N\$ 120 000 at 10 % p.a. at the end of 5 years. [4]

END OF EXAMINATION QUESTION PAPER