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: JUNE 2019	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER

EXAMINER(S)	Mr R Mumbuu, Mrs A Sakaria, Ms Y Shaanika, Mr F Ndinodiva, Mr G Mbokoma, Mr J Amunyela, Mr G Tapedzesa
MODERATOR:	Mrs S Mwewa

INSTRUCTIONS

1. Answer ALL the questions in answer booklet provided.
2. Write clearly and neatly in blue/black ink.
3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Non-Programmable Calculator without the cover

THIS QUESTION PAPER CONSISTS OF 4 PAGES (Including this front page)

SECTION A

QUESTION 1[24 MARKS]

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

1.1 The Lowest Common Multiple (LCM) of 50 , 120 and 75 is: [2]

A. 1350 B.90 C.600 D. 5

1.2 Decompose 720 into a product of its prime factors [2]

A. $2^4 \times 9 \times 5$ B. $16 \times 9 \times 5$ C. $2^4 \times 3^2 \times 5$ D. 4×77

1.3 The Highest Common Factor for 12, 25 and 18 is: [2]

A.5 B.3 C.1 D. 5400

1.4 The expression $(9.52 \times 10^{-2}) + (5.58 \times 10^{-2})$ simplifies to (3 s.f) [2]

A. 15.1×10^{-1} B. 1.51×10^{-1} C. 3.67×10^{-7} D. 1.87×10^{-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 x in the equation $2 = \frac{4}{x+1}$ is? [2]

A. -3 B. 4 C. 1 D. 7

1.10 The original price of a bag is N$1500.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$1350

1.11 If $A = \{x: x \in Z, \ -3 \leq x \leq 3\}$ and $B = \{x: x \ is \ an \ integer \ , x > 3\}$. The set $A \cap B =$? [2]

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

1.12 Ten women can grind a 50kg bag of Omahangu in in 4 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. 4

SECTION B (show all your calculations)

QUESTION 2 (35 MARKS)

2.1 Monica earns a salary every month. She spends NS$3400, which is $\frac{2}{5}$ on accommodation and N$1700 on food. What fraction of her salary is left for other purposes? [4]

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

2.2.1 $2x^2y - yx^2 + 5y^2 + 3x - 2 + 4xy^2 - 3y^2 + 6$ [5]

2.2.2 $\frac{4\,xy^3+6xy^4-8xy^5}{2xy^3}$ [3]

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

2.3 The father was 7 times his son's age five years ago. In five years' time he will be three times his son's age. Let x be the present age of the son.

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

2.3.2 Solve the equation in 2.3.1 to determine the father'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]

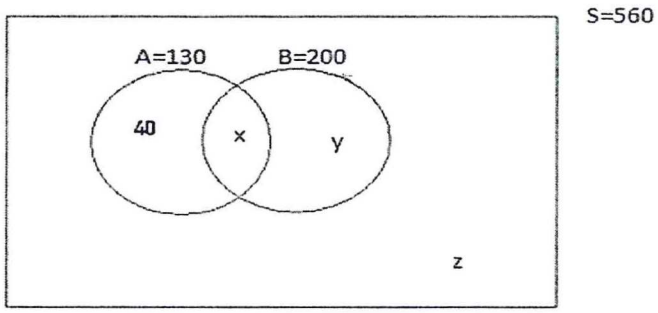
2.5 Factorize the following expressions completely

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



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

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