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 Public Management, Bachelor of Office Management and Technology, Bachelor of Natural Resources Management, Bachelor of Emergency Medical Care, Bachelor of Vocational Instructor	
QUALIFICATION CODE: 07BRRD,25BACO, 24BPMA, 07BLSM, ,07BOMT,07BNTC, 24BPMN 07BRMC	**LEVEL:** 4
COURSE CODE: BMS411S	**COURSE NAME:** BASIC MATHEMATICS
SESSION: JANUARY 2019	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	**Mr. J Amunyela**, Mrs. Aina Sakaria, Ms. Yvonne Shaanika
MODERATOR:	Mrs. S. MWEWA
INSTRUCTIONS	

1. Answer ALL the questions in this question paper.
2. Write clearly and neatly.
3. Number the answers clearly.
4. All written work MUST be done in blue or black ink and sketches must be done in pencils.
5. Only blue or black ink may be used for written work
6. Section A comprises of multiple choice questions with option A to D. Indicate your best option in the examination answer booklet provided.
7. For section B you are required to show all calculations in the answer booklet provided.

PERMISSIBLE MATERIALS

1. Non-Programmable Calculator without the cover

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

SECTION A
(Write down the letter corresponding to the best option for each question)

QUESTION 1 [35 Marks]

1.1   72 is a Multiple of?   [2]

       A. 9 & 10   B. 7 & 9   C. 18 & 5   D. 9 & 8

1.2   Which of the following number is a prime factor of 12?   [2]

       A. 5   B.   2   C. 7   D. 4

1.3   The Lowest Common Multiple (LCM) of 60 ,35 and 75 is   [3]

       A. 1350   B.2100   C.300   D. 5   .

1.4   The expression $(9.52 \times 10^5) + (3.85 \times 10^5)$ simplifies to (3 s.f)   [3]

       A. 13.37×10^5 B. 36.652×10^5 C. 3.67×10^{-7} D. 1.87×10^{-9}

1.5   The expression $xy - 8x - 2 - 2xy + 8x + 1$ simplifies to: [3]

       A. $-xy - 1$ B. $13x + 1$ C. $-4xy - 1$ D. 1

1.6   Factorize $a^2b - b^3$ [3]

       A. $a(a^2 - b^2)$ B. $b(a - b)(a + b)$

       C. $b(a - b)(a - b)$ D. $a(a - b)(a + b)$

1.7   At present, a man is 41 years old and his son is 5 years old. After x years, his son's age will be half his age. What is the value of x ?   [3]

       A. 31   B. 46   C. 29   D. 10

1.8   Given $a = -2 \, ; b = {}^1/_2$, the expression $2ab^{-2}$ simplifies to   [2]

       A. 8   B. 8c   C. 4b   D. -8

1.9   The value of m in the equation $\dfrac{2m-1}{2} = \dfrac{m+1}{4}$ is?   [3]

       A. 1   B. -7   C. -49   D. 7

1.10   The original price of a phone is N$8 500.The manager has agreed to give you a discount of 15% for paying cash. After the discount, you are expected to pay 9% VAT for the phone. How much will you pay on cash for the phone?   [3]

       A. N$7225.   B. N$650.25.   C. N$7875.25.   D. N$1350.

1.11 If $A = \{a, b, c, d\}$ and $B = \{a, c, 1,2,3,4\}$. The set $A - B =$?   [3]

A. $\{b, d\}$ B. $\emptyset$ C. $\{1,2,3,4, a, b, c, d, e, f\}$ D. $\{1,2\}$

1.12 Rewrite the fraction $2\frac{5}{7}$ in standard form correct to 3 significance figures   [2]

A. 2.71×10^0 B. 2.72 C. 2.71×10^1 D. 2.714

1.13 Given $A = \begin{pmatrix} 0 & 5 \\ 1 & 6y \end{pmatrix}$, the determinant of A is   [3]

A. -3   B. -5   C. 0   D. $2x - 3$

SECTION B (show all your calculations in the answer booklet provided)

QUESTION 2 (26 marks)

2.1   The table shows the number of students in the school choir

Students	Number
Girls	48
Boys	64

The choir teacher plans to arrange the students in equal rows. Only girls or boys will be in each row.

What is the greatest number of students that could be in each row?   [3]

2.2   Simplify each of the following expressions without using a calculator

2.2.1 $\frac{240 \div 4}{28 - 16} + 17 - 3(2 \times 2)$ [4]

2.2.2 $(x^3 y^4)^2 \times xy^{-1}$ [3]

2.2.3 $x^2 y + 2xy^3 - 3y^4 - 2xy^3 - x^2 y + 5x^3 y + 2yx^3 - 4xy^3 + 2y^4$ [3]

2.3   Chelsea won six less than twice as many soccer games as Arsenal.

2.3.1 Write an expression in terms of x , representing how many games Chelsea won?   [2]

2.3.2 If both teams won a total of 48 games, write an equation showing the total number of games won by both teams.   [3]

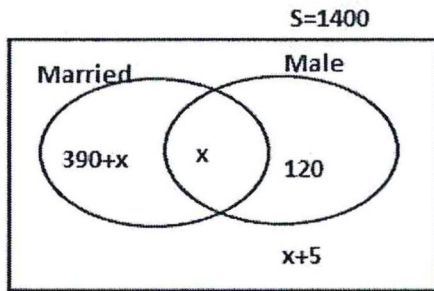2.3.3 How many games does each team win?   [2]

2.4   Solve for x in the following equations:

2.4.1 $4x - 2 = 2x + 10$ [3]

2.4.2 $2x - 1 = \frac{3}{4}x + 9$ [3]

QUESTION 3 (39 marks)

3.1 Consider the Venn diagram below illustrating the marital status of male staff in an organization

S=1400

Married ... Male

390+x   x   120

x+5

3.1.1 What is the value of x? [4]

3.1.2 How many female staff members are there in this organization? [2]

3.1.3 How many of the male staff members are married? [2]

3.1.4 How many staff members are married? [2]

3.1.5 What percentage of staff members are not married? [3]

3.2 Let : $\Omega = \{1,2,3,4,5,6,7,8,9,10\}$, $A = \{x: x \text{ is an integer and } 1 \leq x \leq 6\}$,
$B = \{5,6,7,8,9\}$

Find

3.2.1 $A \cup B$ [3]

3.2.2 $A \cap \bar{B}$ [3]

3.2.3 $(A \cup B)^c$ [2]

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

3.4 Given that matrix $A = \begin{pmatrix} 2 & 3 \\ 1 & 2 \end{pmatrix}$ and $B = \begin{pmatrix} 0 & 2 \\ 6 & 3 \end{pmatrix}$

3.4.1 Obtain the matrix A^2. [4]

3.4.2 Find the determinant of the matrix A. [2]

3.4.3 Obtain the matrix $A - 2B$. [4]

3.5 Congratulation!! You just won N$45 000! You decide to invest your money and the bank presents you with this investment plan. You may invest your N$45 000 at 5% interest, compounded semi-annually, for a period of ten years.

How much interest are you going to earn after 10 years? [5]

END OF EXAMINATION PAPER