namibia university
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL 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 Tourism management, and Bachelor of Hospitality Management	
QUALIFICATION CODE: 07BRRD, 25BACO,07BLSM,07BOMT, 07BNTC,24BPMN, 07BRCMC	**NQF LEVEL:** 4
COURSE NAME: BASIC MATHEMATICS	**COURSE CODE:** BMS411S
DATE: JULY 2022	**PAPER :** THEORY
DURATION: 3 HOURS	**MARKS:** 100

SUPPLEMENTARY/SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER (S)	Mr. SP KASHIHALWA , Mr J AMUNYELA, Dr J Mwanyekange, Mrs. P Nghishidivali
MODERATOR:	Dr J Ongala

INSTRUCTIONS
1. Answer ALL the questions in the answer sheet. 2. Show clearly all the steps used in the calculations. 3. All written work must be done in blue or black ink and sketches must

PERMISSIBLE MATERIALS
1. Non-programmable calculator without a cover.

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

QUESTION 1 [16 MARKS]

Write down the letter corresponding to the best option for each question in the answer booklet/sheet provided.

1.1 What is the solution of this linear equation $2x + 2 = 0$

   A. $x = 1$ B. $x = -1$ C. $x = 2$ D. $x = -2$ [2]

1.2 Which of the following is an irrational number

   A. $\sqrt{4}$ B. $\sqrt{2^6}$ C. π D. $\sqrt{16}$ [2]

1.3 S= $\{1,2,3 \dots 10\}$, , $D = \{1\}$.
   Set D is

   A. Power set   B. A singleton   C. $\emptyset$ D. 1   [2]

1.4 If $A = \begin{bmatrix} 2 & 8 \\ 4 & x \end{bmatrix}$, $\det(A) = 6$, determine the value of x

   A. 19.5   B. -19   C. 19   D. -19.5   [2]

1.5 If matrix $A = \begin{bmatrix} 4 & 6 \\ 2 & 8 \end{bmatrix}$, $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, Find $(A + I)$

   A. 20   B. 9   C. Matrix A   D. $\begin{bmatrix} 5 & 6 \\ 2 & 9 \end{bmatrix}$ [2]

1.6 Find the HCF of 9, 18 and 27

   A. 3   B. 9   C. -9   D. 9 and 3

1.7 Find the LCM of 9, 11 and 10

   A. 99   B. 909   C. 990.   D. 90   [2]

1.8 If it takes 4 days for 10 men to dig a trench, how long will it take 8 men?   [2]

   A. 3.2   B. 5   C. 4.5   D. 4

QUESTION 2 [26] MARKS] (Clearly show all your work)

2.1 Solve the following linear equations

2.1.1. $\frac{4x}{3} + 1 = 3x$ [4]

2.1.2 $3(2x - 5) = 7$ [4]

2.1.2. $3x - 2 = -5x + 8$ [4]

2.2 The population of Namibia is expected to grow to 5 Million in the year 2025, of which 20% will be male. Find the number of male in population and write your answer in floating decimal. [4]

2.3 There are 40 girls and 32 boys in a class who want to participate in playing games. If each team must have the same number of girls and same number of boys, what is the greatest number of teams that can be formed to participate in playing games and how many girls and boys will be on each team? [6]

2.4 Evaluate the following,

2.4.1 $2^5 \times 3 + (7 - 9) \div 2$ [4]

QUESTION 3 [27 MARKS] (Clearly show all your work)

3.1 If $S = \{1,2,3,4,5,6,7,8,9,10\}, B = \{x^2 : x \in N, x < 4\}, C = \{3x : x \in N, x < 4\}$

$$D = \{Odd\ numbers\ less\ than\ 10\}$$

Find

3.2.1 $(B)^C$ [3]

3.2.2 $P(B)$ [4]

3.2.3 $B \oplus D$ [4]

3.2.4 $D - B$ [4]

3.2 A survey on regular payment of municipal bills was carried out on 140 house owners. It was found that 60 pay electricity (E) bills regularly and 45 pay water (W) bills regularly. Further, 20 pay both bills regularly.

3.2.1 Represent the above information on a Venn diagram [4]

3.2.2 Find the number of house owners who pay at least one of the bills regularly [5]

3.2.3 Find the number of house owners who do not pay either bill regularly [3]

QUESTION 4[13 MARKS] (Clearly show all your work)

If $A = \begin{bmatrix} 4 & 2 \\ 6 & 8 \end{bmatrix}, B = \frac{1}{2}A, \quad C = A + B$, Find

4.1 ΔC [4]

4.2 $B + C$ [4]

4.3 BA [8]

Question 5[11 MARKS] (Clearly show all your work)

5.1   NUST borrow N$ 150 000 to purchase furniture from a commercial bank, which offer 9% via simple interest, how much will NUST pays back if it is required to pay the loan back after 5 years   [5]

5.2   Dlozi borrow N$ 50 000 for debt consolidation from a commercial bank, which offer him 20% compounded monthly, how much will he pays back if he is required to pay the loan back after 5 years.   [6]

END