



NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY
FACULTY OF HEALTH AND APPLIED SCIENCES
DEPARTMENT OF MATHEMATICS AND STATISTICS

QUALIFICATION: Bachelor of Technology: Geo-Information Technology, Bachelor of Human Resources Management, Bachelor of Marketing, Bachelor of Business Administration, Diploma in Agricultural Management, Bachelor of Transport Management	
QUALIFICATION CODE: 07BGIT;07BHRM;07BMAR;07BBAD;27DAGR;07BTRM	LEVEL: 5
COURSE: INTRODUCTION TO MATHEMATICS (BUSINESS AND MANAGEMENT)	COURSE CODE: ITM111S
SESSION: JANUARY 2019	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER	Ms. A. Sakaria, Ms. Y. Shaanika, Mr. I. Ndadi, Mr. S. Kashihalwa, Mr. R. Mumbuu, Ms. S. Mwewa, Mr. B. Obabueki
MODERATOR:	Mr. G. Tapedzesa

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions in the booklet provided.2. QUESTION 1 of this paper entails multiple choice questions with options A to D. Write down the letter corresponding to the best option for each question.3. For QUESTIONS 2 AND 3 show clearly all your calculations.4. All written work must be done in blue or black ink.5. Untidy/illegible work will attract no marks.

PERMISSIBLE MATERIALS

1. Non-programmable calculator without a cover.

THIS QUESTION PAPER CONSISTS OF 3 PAGES
(Excluding this front page)

SECTION A [30 Marks]

Question 1 (30 MARKS)

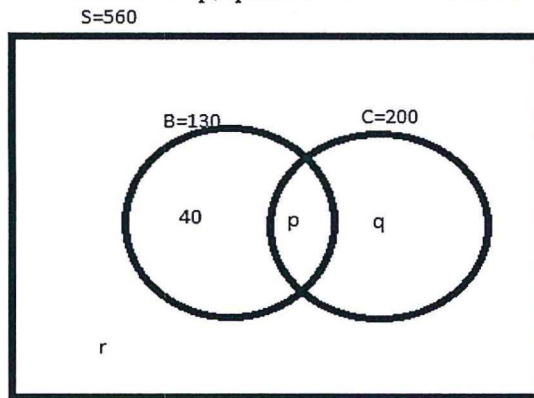
1.1 An amount of N\$200 009.00 can be expressed in standard form as: (3)

- A. $N\$2.0 \times 10^5$ B. $N\$2.00009 \times 10^5$
C. $N\$20.009 \times 10^{-5}$ D. $N\$2.00009 \times 10^{-5}$

1.2 The discriminant (Δ) of the quadratic equation is given by the expression: (3)

- A. $\Delta = b^2 - 4a$ B. $\Delta = \sqrt{b^2 - 4a}$
C. $\Delta = -b \pm b^2 - 4a$ D. $\Delta = b^2 - 4ac$

1.3 The values of p, q and r in the Venn Diagram below are: (3)



- A. $p = 160, q = 200$ and $r = 200$ B. $p = 130, q = 200$ and $r = 320$
C. $p = 90, q = 110$ and $r = 220$ D. $p = 90, q = 110$ and $r = 320$

1.4 Given $S = \{1,2,3,4,5,6\}$, $A = \{1,3,4,5\}$, $B = \{1,2,5\}$, find $(A \cap B)'$ (3)

- A. $\{2,3,4,6\}$ B. $\{1,5\}$ C. $\{1,3,4,6\}$ D. $\{2,3,4\}$

1.5 Factorize the expression $2ab^2 - abd - 2bc + cd$ (3)

- A. $(ab - c)(ab - c)$ B. $(ab - c)(2b - d)$
C. $(ab - c)(2b + d)$ D. $(2b - d)(ab + c)$

1.6 The linear equation, $\frac{4y+1}{3} - \frac{3y-7}{4} = 2$ has a solution, (3)

- A. $y = -41$ B. $y = -\frac{1}{7}$ C. $x = \frac{1}{2}$ D. $x = 33$

1.7 Express $\frac{1}{a^{-1} \times \sqrt[4]{a^{-8}}}$ in the form a^x . (3)

- A. $a^{\sqrt[4]{a^{-8}}}$ B. a^3 C. $a^{\frac{4}{8}}$ D. a^{-3}

1.8 The sum to be invested for four years at 8% p.a compounded semi-annually to amount to N\$3 500 at the end of the investment period is: (3)

- A. N\$ 2 651.52 B. N\$2 557.42 C. N\$2 572.60 D. N\$4 761.71

1.9 The prime decomposition of 1260 is: (3)

- A. $4 \times 9 \times 5 \times 7$ B. $2 \times 3 \times 5 \times 7$
C. $2^2 \times 4 \times 3 \times 5^2$ D. $2^2 \times 3^2 \times 5 \times 7$

1.10 Which of the expressions below represents the following statement? (3)
"y is five less than double x".

- A. $x = 2y - 5$ B. $y = 2x + 5$ C. $y = 2x - 5$ D. $x = 2x + 5$

SECTION B [70 Marks]

Question 2 (24 Marks)

2.1 Expand and simplify

2.1.1 $-2ab - 8(ab - b) - 8b$ (2)

2.1.2 $xy - (x - y)^2 + y^2$ (4)

2.2 Solve the following equation: $-x - 2(x - 1) = 1 - 4(x + 1)$. (3)

2.3 Let $A = \{a, b, c, d, e\}$, $B = \{a, b, d, f, g\}$ $C = \{b, c, e, g, h\}$ and $D = \{d, e, f, g, h\}$

2.3.1 $A \cap (B \cup D)$ (2)

2.3.2 $(A \cap D) \cup B$ (2)

2.3.3 $(A \cup D)$ (2)

- 2.4 Evaluate: $\frac{1}{5} \div \left(\frac{1}{2} - \frac{1}{4}\right) - 2\frac{2}{3} \div \left(-\frac{2}{3}\right) \times \left(-\frac{1}{2}\right)$ (5)
- 2.5 Ketu sold her car for N\$ 117600 making a profit of 12% on the cost price. Calculate the cost price of the car. (4)

Question 3 (46 Marks)

3.1 Without using a calculator, evaluate the logarithmic expressions:

3.1.1 $\log_9 27 - 2 \log_5 25$. (4)

3.1.2 $\log_{11} \sqrt{11^2} + \log_{13} 169 + \log_2 1$ (4)

3.2 consider the following matrices:

$$A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \quad \text{and} \quad B = \begin{bmatrix} -1 & -2 \\ -3 & -4 \end{bmatrix}$$

Determine the matrix:

3.2.1 $A + B$ (4)

3.2.2 $-2B + AB$ (8)

3.2.3 B^{-1} (5)

3.3 Among the 120 freshmen (F) at a college, 40 take mathematics (M), 50 take English (E), and 15 take both subjects. Use Venn diagram to find the number of freshmen who

3.3.1 do not take mathematics (4)

3.3.2 take mathematics or English. (2)

3.3.3 take neither mathematics nor English. (2)

3.4 For a certain arithmetic progression, the first term is 5 and the common difference is -3. Determine the twelfth term. (4)

3.5 Dora invested N\$40 000 for 10 years. After 10 years she received a total amount of N\$52 000 from her investment. Calculate the annual rate at which simple interest was paid. (5)

3.6 Evaluate $\sum_{n=1}^4 (2^n)$ (4)

=====END OF PAPER=====