



UNIVERSITY OF NAMIBIA

FACULTY	Education and Human Sciences		
DEPARTMENT	Intermediate and Vocational Education		
COURSE	Mathematics Education 1A		
COURSE CODE	E3511IM		
DATE	June 2026		
DURATION	3 hours	MARKS	100

SECOND OPPORTUNITY EXAMINATION

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Moderator: Dr. F.N. Haimbodi

INSTRUCTIONS

- Answer each question on a separate answer sheet, using a **blue/black pen**.
- All the working and calculations needed must be clearly shown to obtain full marks.
- Number your questions correctly and clearly as indicated in the question paper.
- Calculators are **NOT** allowed.
- **This paper consists of 4 pages including the cover page**

SECTION A (Multiple choice questions)

Choose the correct answer by writing down the number and the correct letter only, e.g. 1. A.

1. Which base is used in the Hindu-Arabic number system? [2]
A. binary B. decimal C. octagonal D. hexadecimal
2. For which values of x will the exponential expression $(x - 2)^2$ be negative [2]
A. $x > 2$ B. $x = 2$ C. $x < 2$ D. it cannot be negative
3. The difference $MMDCC - CDLXX$ is equivalent to: [2]
A. MMDLLXX B. MMCCXXX C. MMCCLXX D. MMDDCXX
4. The number $\sqrt{11}$ is a: [2]
A. natural number B. integer C. irrational number D. rational number
5. The estimated value of $\sqrt{10} \times \sqrt{15}$ is closest to: [2]
A. 12 B. 13 C. 14 D. 15
6. If the number 3600 is divided by 19, then the remainder is [2]
A. 4 B. no remainder C. 0 D. 9
7. The fraction which exactly half-way between $\frac{1}{5}$ and $\frac{1}{7}$ on the number line is: [2]
A. $\frac{1}{35}$ B. $\frac{1}{12}$ C. $\frac{12}{70}$ D. $\frac{12}{35}$
8. The number 10101_2 is equal to [2]
A. 21 B. 23 C. 18 D. 25
9. Types of numbers which have infinite non-repeating digits after the decimal point. [2]
A. irrational numbers B. rational numbers C. integers D. natural numbers
10. Identify the largest 4-digit number in base 5. [2]
A. 9999 B. 9000 C. 4444 D. 5555

[20]

SECTION B (Structured questions)

Answer all the questions in this section.

Question 1

1.1 Consider the number, 5 530 199.249 and answer the following questions.

1.1.1 What is the value of the underlined digit 5 in the number? [1]

1.1.2 What is the place value of digit 4 in the number? [1]

1.1.3 Write down the value of the underlined digit 9 using a fraction. [1]

1.1.4 What type of a number is the given number in 1.1? [1]

1.2 Convert 3457 to Roman numerals. [3]

1.3 Convert 255 to a hexadecimal number. [4]

1.4 Simplify the expression $(x^6)^{\frac{2}{3}}(x^{-3})^4$ and give your result with positive exponents. [3]

1.5 Evaluate:

1.5.1 $(\sqrt{7} - 5\sqrt{4})^2$ [3]

1.5.2 $MDCL - CD + XXV$ and express the answer in Roman numerals. [3]

[20]

Question 2

2.1 Briefly explain three differences between rational numbers and irrational numbers. [6]

2.2 Using arithmetic, demonstrate if the commutative property of real numbers holds true when the numbers 49 and 26 are added together. [4]

2.3 Calculate the product of 27 and 235 by using the grid and lattice methods of multiplication. [8]

2.4 What are the two (2) main differences that you observe between the grid and lattice methods of multiplication? [2]

[20]

Question 3

Simplify the expressions below:

- 3.1 $\frac{32^{\frac{3}{5}}}{64^{\frac{2}{3}}}$ [5]
- 3.2 $\frac{\sqrt{50} \times (\sqrt{18} + \sqrt{32})}{\sqrt{98} (\sqrt{128} - \sqrt{8})}$ [5]
- 3.3 $3^{x+3} - 3^{x+2}$ [3]
- 3.4 Evaluate $\sqrt[5]{32}$ [3]
- 3.5 $\sqrt[2]{\sqrt[3]{64}}$ [2]
- [20]**
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Question 4

- 4.1 Demonstrate using suitable whole numbers how you will explain to Grade 5 learners that division can be regarded as repeated subtraction. [5]
- 4.2 Calculate the product of $321_4 \times 23_4$ using any approach that you prefer and express the result in base 4. [6]
- Solve the exponential equations below:
- 4.3 $3^{x+3} = 81^{-1}$ [3]
- 4.4 $4^{x+1} + 3 \cdot 4^x = 28$ [5]
- [20]**
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