NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICS AND STATISTICS

QUALIFICATION: NATIONAL DIPLOMA IN PROPERTY STUDIES	
QUALIFICATION CODE:27DPRS, 27DLMR, 27DLAD, 27BPRS	**LEVEL: 4**
COURSE CODE: MSS511S	**COURSE NAME**: MATHEMATICS AND STATISTICS FOR SPATIAL SCIENCES
SESSION: JULY 2019	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER	Dr CR. KIKAWA
MODERATOR:	Mr ANDREW ROUX

INSTRUCTIONS
1. Answer ALL the questions in the booklet provided. 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 be done in pencil.

PERMISSIBLE MATERIALS

1. Non-programmable calculator without a cover.

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

SECTION A: Mathematics (60 marks)

1. Attempt the following questions

   1.1. List down the first 4 multiples of 3.

   (4 marks)

   1.2. What is the lowest common multiple of 4 and 6

   (3 marks)

2. Simplify the following expressions

   2.1. $7x + 4 - 3x + 3$

   (3 marks)

   2.2. $(2x - 3)(2x + 3)$

   (2 marks)

   2.3. $\frac{2x^3+4x^2}{2x^2}$

   (3 marks)

   2.4. $(3x^2y - 5xy + 12xy^2) - (5xy^2 + 4xy)$

   (3 marks)

3. Solve for x in the following equations

   3.1. $3x - 8 = x + 12$

   (3 marks)

   3.2. $5(x - 3) - 7(6 - x) = 24 - 3(8 - x) - 3$

   (4 marks)

4. Work out the following questions

   4.1. Find two numbers whose sum is 28, and whose difference is 4.

   (4 marks)

4.2. Divide N$47 between A,B,C, so that A may have N$10 more than B, and B N$8 more than C.

(7 marks)

4.3. The difference of two numbers is 3, and the difference of their squares is 27. Find the numbers.

(7 marks)

5. Solve the following simultaneous equations

(6 marks)

$$3x + 7y = 27$$
$$5x + 2y = 16$$

6. Find the factors of $3x^2 - 13x + 14$

(3 marks)

7. Work out the following trignometric problems

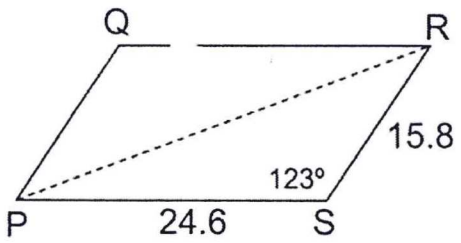
7.1. Find the value of tan 315^o

(3 marks)

7.2. Given the parallelogram, Figure 1, find its area to the nearest square unit.

(5 marks)

Figure 1: parallelogram



Section B: Statistics (40 marks)

8. The height (x) of 10 first year NUST students is measured by their statistics lecturer at the beginning of the course. The results are as given below.
0.2, 0.7, 0.5, 0.6, 0.3, 0.2, 0.4, 0.1, 0.4, 0.8.
Required to calculate and interpret,

   8.1. the arithmetic mean of the data set.

   (5 marks)

   8.2. the median of the data

   (3 marks)

   8.3. the variance of the data set

   (3 marks)

   8.4. the standard deviation

   (3 marks)

   8.5. the coefficient of variation

   (3 marks)

9. The following data represents the age distribution of a sample of 70 women having multiple-delivery birth in 2002.

Age	Number
15 - 19	1
20 - 24	5
25 - 29	16
30 - 34	28
35 - 39	17
40 - 44	3

Required to calculate,

9.1. Copy and complete the table appropriately

(9 marks)

9.2. estimate mean,

(3 marks)

9.3. the variance,

(5 marks)

9.4. the standard deviation,

(3 marks)

9.5. and the coefficient of variation.

(3 marks)

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