NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES

DEPARTMENT OF AGRICULTURAL SCIENCES AND AGRIBUSINESS

QUALIFICATION: BACHELOR OF SCIENCE IN AGRICULTURE **BACHELOR OF SCIENCE IN HORTICULTURE**	
QUALIFICATION CODE: 07BAGA	**LEVEL: 6**
COURSE CODE: RME620S	**COURSE NAME**: BASIC RESEARCH METHODOLOGY
DATE: JULY 2025	
DURATION: 3 HOURS	**MARKS:** 100

SECOND OPPORTUNITY / SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Prof. Thinah Moyo
MODERATOR:	Dr Tendai Nzuma

INSTRUCTIONS
1. Answer ALL five (5) questions. 2. Please write neatly and legibly. 3. Number the answers clearly. 4. Show all your working.

PERMISSIBLE MATERIALS

1. Examination question paper
2. Answer book
3. Calculators

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

QUESTION 1 **[20 Marks]**

(a) How would you describe a research proposal? (5 Marks)

(b) State four reasons why research proposals are written. (4 Marks)

(c) Explain the purpose of a good literature review in three key points. (6 Marks)

(d) Define the acronym 'SMART' and briefly explain its meaning as it applies to research objectives. (5 Marks)

QUESTION 2 **[20 Marks]**

(a) Explain the difference between quantitative and qualitative research methods? (2 Marks)

(b) Explain why research is considered to be an iterative process. (2 Marks)

(c) What is the relationship between sample size and the standard error of the mean? (2 Marks)

A. The standard error decreases as the sample size increases
B. The standard error is unaffected by the sample size
C. The standard error decrease as the sample size decreases
D. The standard error decreases as the sample size increases

(d) Define a population, a sample and a sampling frame. (6 Marks)

(e) The duration of time from first treatment of sorghum crop batches with a specific pesticide to total eradication of the specified insect is shown on the table below (in weeks).

Infected sorghum crop batch	Period to eradication of insects (weeks)
1	12.0
2	14.9
3	9.5
4	13.1
5	13.5
6	6.5
7	7.2
8	7.9
9	10.5
10	5.2
11	6.3
12	10.7
13	12.5
14	8.1

Using this data, compute the following;

i. Sample size (1 Mark)
ii. Range (*provide your answer to the nearest hundredth*) (1 Mark)
iii. $\sum x$ (*provide your answer to the nearest hundredth*) (1 Mark)
iv. $\sum x^2$ (*provide your answer to the nearest hundredth*) (1 Mark)
v. Sample mean (*provide your answer to the nearest hundredth*) (1 Mark)
vi. Sample median (1 Mark)
vii. Sample standard deviation (*provide your answer to the nearest hundredth*) (2 Marks)

QUESTION 3 **[20 Marks]**

You take a random sample of ten car owners and ask them, "To the nearest year, how old is your current car?" Their responses are as follows: 0 years, 1 year, 2 years, 4 years, 8 years, 3 years, 10 years, 17 years, 2 years, 7 years.

(a) Calculate the standard deviation of this sample to the nearest year. Show all steps in your calculation. (15 Marks)

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

Hint:

(b) What is the mode and median for the age of the cars? (5 Marks)

QUESTION 4 **[20 Marks]**

(a) A Real Estate Agent tells you that the average cost of houses in a town is NAD2,176,000. You want to know how much the prices of the houses may vary from this average. What measurement do you need? (2 Marks)

A. standard deviation
B. interquartile range
C. variance
D. percentile

(b) To the nearest thousandth, what is the mean of the following data set? 0.003, 0.045, 0.58, 0.687, 1.25, 10.38, 11.252, 12.001 (2 Marks)

(c) To the nearest tenth, what is the median of the following data set? 18, 21, 17, 18, 16, 15.5, 12, 17, 10, 21, 17. (2 Marks)

(d) Define correlation coefficient. (2 Marks)

(e) Identify which of the following options is a quantitative variable and explain why.(2 Marks)

A. the colour of an automobile
B. a person's region of residence
C. a person's postal code

D. a person's height, recorded in centimetres
E. choices (C) and (D)

(f) From the scenario in (e) above, which variables are qualitative and why? (6 Marks)

(f) You took a survey of 100 people and found that 60% of them like chocolate and 40% do not. Which of the following results presentations gives the distribution of the "chocolate versus no chocolate" variable? (4 Marks)

A. a table of the results
B. a pie chart of the results
C. a bar graph of the results
D. a sentence describing the results
E. all of the above

QUESTION 5 **[20 Marks]**

(a) State and describe 5 common data distribution patterns in statistics. (10 Marks)

(b) If the formula for a regression line is **y= 10x + 27**. Describe the components of this line and the interpretation thereof. (5 Marks)

(c) An Analysis of Variance (ANOVA) uses the following null and alternative hypotheses:
H_0: All group means are equal.
H_1: At least one group mean is different from the rest.
Whenever you perform an ANOVA, you will end up with a summary table that looks as follows:

Source	Sum of Squares (SS)	df	Mean Squares (MS)	F	P-value
Treatment	192.2	2	96.1	2.358	0.1138
Error	1100.6	27	40.8		
Total	1292.8	29			

Interpret the F-statistic and the corresponding *p*-value of this ANOVA result. (5 Marks)

THE END

Total Marks: 100