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: JUNE 2025	
DURATION: 3 HOURS	**MARKS:** 100

FIRST OPPORTUNITY / REGULAR 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 5 PAGES (Including this front page)

QUESTION 1 **[20 Marks]**

(a) List four reasons why research proposals are written. (4 Marks)

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

(c) Explain the purpose of a good literature review in three key points. (3 Marks)

(d) What statistic reports the relative standing of a value in a set of data? (2 Marks)

(e) Given the following information, which describes these two variables and their relationship in the data set:

$$\bar{x} = 915.1; \bar{y} = 121.1$$

$$s_x = 58.5; s_y = 11.8$$

$$r = 0.527$$

How do you describe the linear relationship between these two variables? Explain your answer. (3 Marks)

(f) Why is research report writing necessary? (3 Marks)

QUESTION 2 **[20 Marks]**

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

(b) What is the difference between quantitative and qualitative research methods? (2 Marks)

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

(d) Define mixed-methods research? (2 Marks)

(e) What statistic reports the relative standing of a value in a set of data? (2 Marks)

(f) List incorrect citations from the paragraph below. Also explain why each citation you listed is incorrect.

According to (Scoones, 2009), diverse livelihoods emerge from multiple activities interacting with each other. Several factors influence smallholder farmers' choice of livelihood strategies and dependence on agriculture (Ellis, 1998; Alemu 2012). Sikhweni & Hassan (2014) state that apart from understanding rural households' preferred livelihood strategies, underlying determinants driving them towards any of the livelihood choices are equally important for an investigation. (6 Marks)

QUESTION 3 **[20 Marks]**

A large statistics class takes a midsemester examination worth a total of 100 points. The following is a random sample of 20 students' scores from the class:

Score of 98 points: 2 students
Score of 95 points: 1 student
Score of 92 points: 3 students
Score of 88 points: 4 students
Score of 87 points: 2 students
Score of 85 points: 2 students
Score of 81 points: 1 student
Score of 78 points: 2 students
Score of 73 points: 1 student
Score of 72 points: 1 student
Score of 65 points: 1 student

(a) Calculate the standard deviation of the exam scores for the students in this sample to the nearest tenth of a point. Show all your calculations. (15 Marks)

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

Hint:

(b) What is the mode and median class marks? (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) The starting salaries (in dollars) of a random sample of 125 university graduates were analysed. The following descriptive statistics were calculated and typed into a report:

Mean: 24,329
Median: 20,461
Variance: 4,683,459

Minimum: 18,958
Q1: 22,663
Q3: 29,155
Maximum: 31,123

Which important descriptive statistic is missing in this result? (1 Mark)

(e) If the mean weight of NUST students taking Basic Research Methodology (RME620S) during the 2025 academic year is written as 65.08 ± 2.04kg. Use this information to answer the following questions.
   (i) What is the weight of the student with the least weight in the class? (2 Marks)
   (ii) What is the range of the class weight? (2 Marks)

(f) Define correlation coefficient. (2 Marks)

(g) When intepreting a correlation cooefficient, it is important to look at: (3 Marks)
   A. The magnitude of the correlation coefficient (from -1 to +1)
   B. The +/- sign of the correlation coefficient
   C. The significance of the correlation coefficient
   D. All of these options

(h) 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) A Horticulturalist wants to determine whether different types of fertilisers affect plant growth.

Research design:

Independent variable (IV): Type of fertiliser (Organic, Chemical and No fertiliser)

Dependent variable (DV): Average plant height after 6 weeks (*measured in cm*)

(i) In general, when will using Analysis of Variance (ANOVA) in scientific research be most appropriate. (2 Marks)

(ii) Using the research example provided above, please state the null and alternative hypotheses, using correct scientific notation for each hypothesis. (4 Marks)

(iii) Based on the example above, please provide an interpretation of a one-way ANOVA result based on a 0.05 level of statistical significance. (2 Marks)

(iv) Explain how a post-hoc test (e.g., Tukey's HSD) can be applied in this instance. (2 Marks)

(b) If the formula for a regression line is **y= 641 + 8.45x**. Describe the components of this line and the interpretation thereof. (3 Marks)

(c) The Table below shows results of a Regression model for the RME620S students' class of 2025 (n=42).

Table 1: Coefficients

Model		B	SE (β)	*p*-value
1	(Constant)	2.008	1.592	<0.001
	Are you employed?	-1.558	1.094	<0.001
	What is your age?	.030	.070	0.004
	Where in Windhoek do you reside?	-.088	.051	<0.001
	What is your sex?	.597	.527	0.05
	What is your study specialisation?	.627	.364	0.094

a. Dependent Variable: Since the beginning of this semester, how many RME620S classes have you missed?

Write out the regression equation based on these results, specifying the variable names in the equation. (7 Marks)

THE END

Total Marks: 100