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	
QUALIFICATION CODE: 07BAGA	LEVEL: 7
COURSE CODE: RME620S	COURSE NAME: BASIC RESEARCH METHODOLOGY
DATE: JUNE 2024	
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY / REGULAR EXAMINATION QUESTION PAPER	
EXAMINER(S)	Dr 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) How would you describe a research proposal? (5 Marks)

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

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

(d) 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)

(e) Why is research report writing necessary? (3 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) Define mixed-methods research? (2 Marks)

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

(e) What is the purpose of sampling, and what might go wrong during the process? (4 Marks)

(f) What should a researcher trust? Provide advice based on your understanding of different sources of literature. (2 Marks)

(g) What is the relationship between independent and dependent variables? (2 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)

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

(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) In question (d) above, what is the range for these starting salaries?   (2 Marks)

(f) Which of the following is an example of a quantitative variable (also known as a numerical variable) and 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)

(g) Define the correlation coefficient and list three of its properties.   (5 Marks)

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

(b) If the formula for a regression line is **y= 10x +6**. 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 2023 (n=32). Write out the regression equation based on these results, specifying the variable names in the equation.   (7 Marks)

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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?

THE END

Total Marks: 100