



**NAMIBIA UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT**

**DEPARTMENT OF ARCHITECTURE, PLANNING AND CONSTRUCTION**

<b>QUALIFICATION:</b> BACHELOR OF REGIONAL AND RURAL DEVELOPMENT	
<b>QUALIFICATION CODE:</b> 07BRAR	<b>NQF LEVEL:</b> 5
<b>COURSE CODE:</b> SRP520S	<b>COURSE NAME:</b> STATISTICS FOR REGIONAL PLANNERS
<b>DATE:</b> NOVEMBER 2022	<b>PAPER:</b> THEORY
<b>DURATION:</b> 3 HOURS	<b>MARKS:</b> 100

<b>FIRST OPPORTUNITY EXAMINATION QUESTION PAPER</b>	
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<p style="text-align: center;"><b>INSTRUCTIONS</b></p> <p>Please write clearly and legibly!</p> <p>Read each question carefully before answering it.</p> <p>You must <b>answer all questions</b> in this exam.</p> <p>Make sure your Student Number is on the EXAMINATION BOOKLET(s).</p>
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**This Question Paper Consists of 8 Pages (Including this Front Page)**



Question 1

*Select and write down the correct answers for the following:*

(a). The list of all the subjects in the population that is needed to conduct a simple random sampling is known as: (1)

- (i) Sampling bias
- (ii) Sampling error
- (iii) Sampling frame
- (iv) Response bias

(b). All the following are narrow components of population change except: (1)

- (i) Births
- (ii) Commuting
- (iii) Migration
- (iv) Deaths

(c). In a cluster random sample, you take a sample of: (1)

- (i) The subjects within every cluster
- (ii) The clusters
- (iii) The subjects within each stratum
- (iv) The strata



(d). A ..... is formed when individual indicators are compiled into a single index, on the basis of an underlying model of the multi-dimensional concept that is being measured. (1)

(i) Development model

(ii) Composite index

(iii) Socio-economic multiplier

(iv) Technology index

(e). The United Nations Generic Data Quality Assurance Framework includes the following process quality components except: (1)

(i) Social engineering

(ii) Cost effectiveness

(iii) Respondent burden

(iv) Methodological soundness

(f). An infant is generally considered to be a person: (1)

(i) Less than 15 years of age

(ii) Between the ages of 13-19

(iii) Less than 1 year of age

(iv) 65 years of age and over

(g). All the following are steps in the construction of composite indices except: (1)

(i) Data selection

(ii) Normalisation

(iii) Valorisation

(iv) Weighting and aggregation



(h). The most common measure of age is: (1)

(i) The number of years after birth

(ii) The number of years after death

(iii) The number of days after birth

(iv) The number of days after death

(i). In a human population, the potential or capacity to produce is known as: (1)

(i) Fertility

(ii) Fecundity

(iii) Mortality

(iv) Sexuality

(j). A statement about a population parameter subject to verification is known as: (1)

(i) Sample

(ii) Inference

(iii) Statistic

(iv) Hypothesis

[10]

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Question 2

(a) Define the term statistics. (2)

(b) State three reasons why it is important to study statistics. (3)

[5]





Question 3

- (a) What is a time series analysis? (2)
- (b) List three reasons why we need a time series analysis. (3)
- [5]
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Question 4

Define the following terms:

- (a) Population size (2)
- (b) Population distribution (2)
- (c) Population composition (2)
- [6]
- 

Question 5

List the four main components of quality under the Namibia Quality Assurance Framework for Statistics.

[4]

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Question 6

Distinguish between the following terms:

- (a) Discrete and continuous variables (2)
- (b) Descriptive and inferential statistics (2)
- (c) Population and sample (2)
- (d) Ordinal and interval scales (2)

[8]

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Question 7

Suppose  $P(A)$  represents the probability that a local authority in Namibia will allocate more resources to poverty alleviation programmes in the 2023 financial year. If  $P(A) = 0.35$ , what is the probability that the local authority will **not** allocate more resources to poverty alleviation programmes in the 2023 financial year?

[3]

Question 8

The following show the number of years selected Namibian planners have practised in the profession: 5, 10, 5, 10, 15, 35, 20, 10, 25 and 10. Calculate the following for the number of years:

- (a) Mean (2)
  - (b) Median (2)
  - (c) Mode (1)
  - (d) Range (2)
- [7]

Question 9

A survey estimates that the probability planners believe in bottom-up decision-making is 0.74. Of the planners who believe in bottom-up decision-making, 65% also advocate the importance of regional planning. What is the probability that a randomly selected planner believes in both bottom-up decision-making and regional planning?

[4]



Question 10

Let  $x$  represent the number of times a political party has won local elections in Namibia over the past 10 years. Assuming that the probability distribution of  $x$  is approximately:  $P(0) = 0.12$ ,  $P(1) = 0.45$ ,  $P(2) = 0.24$ ,  $P(3) = 0.05$  and  $P(4) = 0.14$ .

- (a) Is  $x$  a discrete or a continuous variable? Please explain briefly. (2)
- (b) Construct a table showing the probability distribution of  $x$ . (5)
- (c) Find the mean of the probability distribution. (4)

[11]

Question 11

As a development planner, you have the task of sampling from the 10,000 residents in a community to find out the percentage of inhabitants who believe quality of life has improved over the past decade. Explain how you would proceed if you want a systematic random sample of 250 residents.

[5]

Question 12

The ages of a sample of five development planners are as follows: 25, 40, 55, 30 and 50. Calculate the following for the ages:

- (a) Mean (3)
- (b) Sample variance (5)
- (c) Sample standard deviation (6)

[14]



Question 13

The following table summarises the population data for a particular region.

Population/Land Area	Figures
Population in 2015	100,000
Population in 2014	92,500
Males aged 15-64 in 2015	28,000
Females aged 15-64 in 2015	30,300
Population less than 15 years in 2015	17,500
Population 65 years and older in 2015	24,200
Land area in 2015 (in square kilometres)	1,250

(a) Calculate the following:

- (i) Annual population growth rate between 2014 and 2015 (4)
- (ii) Sex ratio for the population aged 15-64 in 2015 (3)
- (iii) Dependency ratio in 2015 (4)
- (iv) Population density in 2015 (3)

(b) Interpret the calculations in (a) above. (4)

[18]

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END

TOTAL

[100]

