



PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL RESOURCES
SCHOOL OF HEALTH SCIENCES
DEPARTMENT OF CLINICAL HEALTH SCIENCES

QUALIFICATION: BACHELOR OF HUMAN NUTRITION ,BACHELOR OF HEALTH INFORMATION SYSTEM, BACHELOR OF ENVIRONMENTAL SCIENCES, BACHELOR OF BIOMEDICAL SCIENCES	
QUALIFICATION CODE: 07BHIS, 07BSHM, 08BMLS, 08BOHN,08BOHS	NQF LEVEL: 5
COURSE NAME: HEALTH SCIENCE STATISTICS	COURSE CODE: HSS511S
SESSION: JULY 2023	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER	
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INSTRUCTIONS	
<ol style="list-style-type: none">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).

QUESTION 1 [20 MARKS]

Write down the letter corresponding to the best answer for each question.

- 1.1 If event C and event D mutually exclusive and collectively exhaustive, what is the $P(C \cap D)$ time? [2]
- A. 0.00
 - B. 0.50
 - C. 1.00
 - D. 1.01
- 1.2 Student number, area code and car registration are example of: [2]
- A. Qualitative and quantitative.
 - B. Mixed data.
 - C. Qualitative data.
 - D. Continuous data.
- 1.3 Which of the following is the same as quartile 2 [2]
- A. Mode
 - B. Central measure of tendency
 - C. IQR
 - D. Median
- 1.4 If the probability of experiencing adverse event after COVID-19 vaccine is 0.2. What is the probability of not experiencing adverse event? [2]
- A. 0.08
 - B. 0.8
 - C. 0.2
 - D. Cannot be determined
- 1.5 The mode of a data set is: [2]
- A. Unique
 - B. Not affected by outliers
 - C. Can be several
 - D. B&C
- 1.6 A patient is chosen at random from a group of 5 who suffer from diabetes and 20 who suffer from cancer. What is the probability that the patient chosen suffer from diabetes? [2]
- A. 0.8 B. 0.20 C. 0.50 D. 0

- 1.7 Which of the following is a measure of central tendency: [2]
- A. Mean
 - B. Variance
 - C. Range
 - D. A&C
- 1.8 A proportion of a population is: [2]
- A. Sample
 - B. Mean and Mode
 - C. Subset
 - D. Parameter
- 1.9 The more data are spread out the greater the: [2]
- A. Mean, Mode and range
 - B. Range, Standard deviation and Variance
 - C. Mean, Mode and Variance
 - D. B&C
- 1.10 Which of the following is used to present both qualitative and quantitative data: [2]
- A. Summary table
 - B. Frequency polygon
 - C. Bar chart and pie chart
 - D. Frequency probability table

QUESTION 2 [26 MARKS]

2.1 Consider a survey of CEOs' opinions of their social welfare. What types of variables are the following (Indicates if they are qualitative or quantitative and if they are continuous or discrete):

- a) Marital Status [1]
- b) Education level [1]
- c) Annual bonus [2]
- d) Number of annual report submitted to the board [1]
- e) Body mass of the CEO [2]
- f) Possession of a degree [1]

2.2 The age (in years) of a sample of 20 motor cyclists killed in road traffic accidents is given below.

18 41 24 28 71 52 15 20 21 31 16 24 33 44 20 24 16 64 24 32

- 2.2.1 Draw a stem and leaf [5]
- 2.2.2 Calculate the mean, range, median and mode [8]
- 2.2.2 Compute the variation and standard deviation [5]

Question 3 [26 MARKS]

3.1 The Ministry of Health and Social Services gets 40% of it is Beta bloc from a manufacturer in South Africa and the remainder from a manufacturer in Lesotho. The quality of the Beta bloc delivered is given below.

Manufactures	% Of non-defective Beta Bloc	% of defective Beta Bloc
South Africa	90	10
Lesotho	75	25

- 3.1.1 Find the probability of receiving a non-defective Beta bloc [8]
- 3.1.2 Find the probability that a randomly chosen Beta bloc comes from a Manufacturer in Lesotho and it is non- defective [3]

3.2 The blood group of 55 women diagnosed as suffering from thromboembolic disease and 145 healthy women are displayed below, use *WT* = *women with thromboembolic*, *HW* = *Healthy women*

Blood Group	Women with thromboembolic disease	Healthy women	Total
A	32	51	83
B	8	19	27
AB	6	5	11
O	9	70	79
Total	55	145	200

- 3.2.1 Show that blood group A and women with thromboembolic are independent or not [3]
 3.2.2 Find $P(AB \cup HW)$ [4]
 3.2.3 Find $P(O/WT)$ [4]
 3.2.4 Find $P(B/WT)$ [4]

Question 4[28 MARKS]

4.1 20 pregnant women, with dystocia, were allocated at random to receive immersion in water in a birth pool to assess the impact of laboring in water during the first stage of labour. The main outcome was "use of Epidural analgesia at any stage of labour". 5 of the pregnant women used Epidural analgesia. If a pregnant women is selected at random, what is the probability of?

- 4.1.1 Exactly two pregnant women have used Epidural analgesia [2]
 4.1.2 At most two pregnant women have used Epidural analgesia [4]
 4.1.3 At least four women have used Epidural analgesia [4]
 4.1.4 None of the pregnant women have used Epidural analgesia [2]
 4.1.5 At least one women have used Epidural analgesia [3]

4.2 In a group of patients presented to a hospital casualty department with Intracranial Hematoma (IH), investigation revealed that most of the patients suffer IH 3 times per year on average.

- 4.2.1 What is the probability that in a group of patients, at least two patient presented to casualty suffers from IH [5]
 4.2.2 What is the probability that one patient presented to casualty suffers from IH [2]
 4.2.3 What is the probability that at most 3 patients presented to casualty suffers from IH[6]

END