WOMEN'S UNIVERSITY IN AFRICA

Addressing gender disparity and fostering equity in University Education

FACULTY OF SOCIAL SCIENCES AND GENDER DEVELOPMENT STUDIES

BACHELOR OF SCIENNCE (HONOURS) DEGREE IN PSYCHOLOGY

KPS216: INTRODUCTION RESEARCH METHODS AND STATISTICS

INTAKE 33: SECOND YEAR SECOND SEMESTER

DATE: JUNE 2024   **TIME: 3 Hours**

INSTRUCTIONS TO CANDIDATES

Answer question **ONE** and any other **TWO**

Additional information

1. List of Formulae
2. Statistical tables to be provided

1. An education researcher is interested in the descriptive statistics about pies provided to learners in Schools Feeding Programmes. A random sample of beef, chicken and vegetable pies is selected from 11 primary schools. The table below shows contains calorie data on the random sample of beef, chicken and vegetable pies.

Table 4.1:   Calorie in Pies

Beef	110	110	130	130	140	150	160	160	170	170	175
Chicken	60	60	60	70	70	70	80	90	90	100	100
Veggie	40	45	45	45	45	50	50	55	60	60	70

Obtain:

a) Mean calorie for each pie;
b) Variance for each pie; and
c) Standard deviation for each pie.

[40]

2. (a) Compare and contrast probability and non- probability sampling.   [7]

(b) Evaluate the strengths and weaknesses of any two sampling techniques.   [7]

c) The following scores are obtained from a 13- item numerical Computation test;
2,4,6,7,10,12,15,15,16,19,20,21,24

(i)   On what scale is the data and why   [3]
(ii)   Draw a chart to illustrate the data   [7]
(iii)   Calculate the Semi- interquartile range of the distribution   [4]
(iv)   Establish the midrange for the data set   [2]

3 (a) Write the claim as a mathematical sentence. State the null and alternative hypotheses, and identify which represents the claim.

i. A university publicizes that the proportion of its students who graduate in 4 years is 70%.
[5]
ii. A water faucet manufacturer announces that the mean flow rate of a certain type of faucet is less than 2.5 gallons per minute.
[5]
iii. A cereal company advertises that the mean weight of the contents of its 20-ounce size cereal boxes is more than 20 ounces.
[5]
(b) A psychologist claims that the average emotional intelligence score is less than 50. A random sample of 50 participants has a mean of 70 and a sum of squared deviations of 200. Verify the claim at alpha = 0.1
[15]

4. In a study testing the effects of calcium supplements on blood pressure in men, 12 men were randomly chosen and given a calcium supplement for 12 weeks. The measurements shown in the table are for each subject's diastolic blood pressure taken before and after the 12-week treatment period. At α= 0.05 can you reject the claim that there was no reduction in diastolic blood pressure?

Patient	1	2	3	4	5	6	7	8	9	10	11	12
Before	108	119	120	129	113	105	117	135	124	118	130	115
After	99	135	105	116	116	111	109	122	124	126	128	106

5. (a) Define measures of dispersion [3]

(b) Examine the three most commonly used measures of dispersion [3]

(c)   14, 20, 13, 9, 17, 12, 16, 11, 12, 15, 19, 9, 8, 20, 14, 18
From the data given above calculate the following:

i. Range

ii. Variance

iii. Interquartile range

iv. Standard deviation respectively. [24]