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KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY

UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
SECOND YEAR, FIRST SEMESTER EXAMINATION
FOR THE DEGREE OF BACHELOR OF SCIENCE
(BUSINESS ADMINISTRATION)

Date: 14th August, 2023
Time: 2.30pm –4.30pm

KBA 203 - STATISTICS FOR MANAGEMENT

INSTRUCTIONS TO CANDIDATES

ANSWER **QUESTION ONE (COMPULSORY)** AND **ANY OTHER TWO** QUESTIONS

QUESTION ONE (30 MARKS)

a) Distinguish between descriptive and inferential statistics. (2 marks)

b) The following data shows the 9 months' profits (in millions) made during the past year: 34, 28, 35, 24, 40, 37, 43, 30, 35. Calculate;

i) Standard deviation (4 marks)

ii) 4.6^{th} decile (3 marks)

iii) 64.5^{th} percentile (2 marks)

c) An basket contains four oranges, three apples, and five mangoes. If two fruits are selected randomly without replacement, determine the probability that

i) The first fruit selected is an apple (3 marks)

ii) The two fruits are of the same kind (3 marks)

d) Given

X	0	1	2	3	4
P(X=x)	0.04	d	0.15	0.21	0.25

i) Determine the value of d (2 marks)
Hence calculate

ii) Mean (2 marks)

iii) Variance (3 marks)

e) Describe two methods of data collection stating one advantage and one disadvantage for each method (4

marks)

f) State and explain the two types of hypothesis testing errors. (2 marks)

QUESTION TWO (20 MARKS)

a) Describe the reasons why a researcher would prefer a sample survey over a census (4 marks)

b) The distribution of profits made by different brands is as follows;

Brand	Nike	Jordan	Airforce	Bata	Adidas	Reebok
Profit	30	20	14	23	10	22

i) Draw a bar chart to represent this data (3 marks)

ii) Calculate the harmonic mean (3 marks)

c) A group of 8 commerce students tested in statistics and business and their performance was recorded as shown below

Student	A	B	C	D	E	F	G	H
Statistics (X)	20	50	30	60	10	40	70	80
Business (Y)	40	30	20	60	10	80	50	70

Find the Pearson product-moment correlation coefficient (r) between the two subjects and interpret it. (6 marks)

d) The probability of contracting a disease by a worker is 20%. What is the probability that out of six workers, 4 or more will contract the disease? (4 marks)

QUESTION THREE (20 MARKS)

a) Differentiate between Probability and Non-probability sampling methods, and state an example for each. (4 marks)

b) Calculate the mean absolute deviation for the following data: 14, 10, 19, 17, 22, 12, 23. (3 marks)

c) Two events are such that, the $P(A) = 0.5$ and $P(A \cup B) = 0.71$, calculate $P(B)$ if

i) A and B are mutually exclusive events (3 marks)

ii) A and B are independent events (4 marks)

d) The following table shows the distribution of the weights of 20 students

Class	40-49	50-59	60-69	70-79	80-89
Frequency	3	4	8	3	2

i) Draw a Cumulative frequency curve (Ogive) to represent this data. (4 marks)

ii) What is the median from the graph in (i) above? (2 marks)

QUESTION FOUR (20 MARKS)

a) Explain three uses of statistics in business.

(3 marks)

b) An important application of regression analysis in accounting is in the estimation of cost. Consider the following sample of production volumes and total cost data for a manufacturing operation:

Production Volume (X)	7	5	10	4	9	6
Total Cost (Y)	59	50	70	40	64	54

i) Draw a scatter diagram for this data (3 marks)

ii) Determine the simple linear regression relationship between production volume and total cost (6 marks)

iii) Estimate the total cost when the volume produced is 12

(2 marks)

c) Marks obtained by two students in various tests are shown below. The pass mark to proceed to the next class is a weighted mean of 55% marks on the four subjects. Use the weighted mean criteria to determine who will qualify to join the next class and who does not.

	Statistics	Life Skills	Psychology	Finance
Student A	70	45	35	75
Student B	25	87	83	30
Weight	3.6	2.3	1.5	2.6

(6 marks)

QUESTION FIVE (20 MARKS)

a) Use the frequency distribution below to answer the questions that follow

Class	1-10	11-20	21-30	31-40	41-50	51-60
Frequency	10	14	20	16	12	8

i) Draw a histogram to represent this data (3 marks)

Calculate

ii) Mean (4 marks)

iii) Upper quartile (4 marks)

iv) Mode (3 marks)

b) We wish to know if we may conclude, at the 95% confidence level, that smokers, in general, have greater lung damage than do non-smokers. (6 marks)

Lung destructive index	n	$\bar{x}$	S
Smoker	16	17.5	4.4711
Non-Smoker	9	12.4	4.8492

(6 marks)