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KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2022/2023 ACADEMIC YEAR
SECOND YEAR, FIRST SEMESTER EXAMINATION
FOR THE DEGREE OF BACHELOR OF SCIENCE
(BUSINESS ADMINISTRATION)

Date: 13th December, 2022
Time: 11.30am –1.30pm

KBA 203 - STATISTICS FOR MANAGEMENT

INSTRUCTIONS TO CANDIDATES

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

QUESTION ONE (30 MARKS)

a) Distinguish between the following terms:
  i) Sampling and Census (2 Marks)
  ii) Independent and Mutually exclusive event (2 Marks)
b) Differentiate between Type I and Type II errors as used in statistical inference.
(2 Marks)
c) The data points are given by
  17, 15, 28, 35, 27, 47, 55, 15, 22, 27, 11, 9, 20, 15
  Estimate the

  i) Mean. (2 Marks)

  ii) Mode. (1 Mark)

  iii) Median. (2 Marks)

d) Whenever a business complaint comes up there is a recommended procedure for conducting a statistical test. State the steps normally adopted in the hypothesis testing procedure
(5 Marks)
e) Explain four applications of probability in business management (4 Marks)
f) Given the following data on demand(X) and price(Y) for sugar in Nairobi County.

X	1	3	4	6	8	9	11	14
Y	100	200	400	400	500	700	800	900

  i) Fit a least square regression line of Y on X (5 Marks)

  ii) Find the value of Y when X=7 (2 Marks)

g) There are 3 red, 5 black and 4 white marbles in a box. Two marbles are drawn, one at a time and without replacement. What is the probability of selecting marbles are of same colour.
(3 Marks)

QUESTION TWO (20 MARKS)

a) The table provides details of prices and quantities sold of two particular commodities in a departmental store for 2017 and 2018.

Commodity	2017		2018	
	Price	Quantity	Price	Quantity
X	438	37	462	18
Y	322	26	384	45

By taking 2017 as the base period,
Compute

i) The price relatives for each commodity (4 Marks)
ii) Paasche's index (3 Marks)
iii) Fisher's Quantity Index (3 Marks)
iv) Why is the Fisher's index considered ideal? (2 Marks)

b) A time series can be viewed as being made up of a number of components. Using examples, explain. (4 Marks)

c) What is the importance of forecasting in today's business environment.

(4 Marks)

QUESTION THREE (20 MARKS)

a) The data on a certain variable are given in the frequency distribution

Class	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89
Frequency	2	7	12	17	10	8	3	1

Estimate;

i) Mode. (2 Marks)
ii) Median. (2 Marks)
iii) Interquartile range. (3 Marks)
iv) Mean. (3 Marks)
v) Standard deviation. (3 Marks)

b) A foreign company which manufactures electric bulbs has assured its customers that the lifespan of the bulbs is 28 months with a standard deviation of 4 months. Recently the company embarked on quality improvement research for its product. After the research using new technology. A sample of 70 bulbs was tested and they gave a mean lifespan of 30.2 months
Does this justify the research undertaken? Use a 1% level of significance to conduct a statistical test in order to establish the truth about the above question.

(3 Marks)

c) Distinguish between the additive and the multiplicative models of the time series

(4 Marks)

QUESTION FOUR (20 MARKS)

a) Using examples explain the four levels of measurement in statistics.

(8 Marks)

b) List two situations where binomial distribution can be applied.

(2 Marks)

c) In a competitive examination. 30 candidates are to be selected. All 600 candidates appear in a written test, and 100 will be called for an interview.

i) What is the probability that a person will be called for the interview?

(3 Marks)

iii) Determine the probability of a person getting selected if he has been called for the interview?

(3 Marks)

iii) Probability that person is called for the interview and is selected?

(4 Marks)

QUESTION FIVE (20 MARKS)

a) Telephone calls arrive at a switchboard at a rate of 50 per hour.

i) Identify the distribution   (2 Marks)

ii) Find the probability of 0,1 or 2 calls arriving in any period of 5 minutes

(5 Marks)

b) In a random sample of 100 persons taken from village A, 60 are found to be consuming tea. In another sample of 200 persons taken from village B, 100 persons are found to be consuming tea. Do the data reveal a significant difference between the two villages so far as the habit of taking tea is concerned?   (6 Marks)

c) A bag contains 80 balls of which 20 are red, 25 are blue and 35 are white. A ball is picked at random what is the probability that the ball picked is:
i) Red ball

(2 Marks)

ii) Black ball

(3 Marks)

iii) Red or Blue ball.

(2 Marks)