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(Knowledge for Development)

KIBABII UNIVERSITY
UNIVERSITY EXAMINATIONS
2017/2018 ACADEMIC YEAR
FIRST YEAR FIRST SEMESTER
MAIN EXAMINATION

FOR THE DEGREE OF BACHELOR OF EDUCATION AND
BACHELOR OF SCIENCE

COURSE CODE: STA 141

COURSE TITLE: INTRODUCTION TO STATISTICS

DATE: 15/01/18

TIME: 9 AM -11 AM

INSTRUCTIONS TO CANDIDATES

Answer Question One and Any other TWO Questions

TIME: 2 Hours

This Paper Consists of 4 Printed Pages. Please Turn Over.

QUESTION ONE (30 Marks): COMPULSORY

- a) Define the term statistics in reference to its types (2 mks)
- b) Describe four characteristics of a good measure of central tendency (4 mks)
- c) Given the following set of numbers: 5, 10, 15, 20, 25; determine;
 - i. The Geometric mean (3 mks)
 - ii. Harmonic mean (3 mks)
- d) Explain the term dispersion as used in statistics. What purpose does a measure of dispersion serve (5 mks)
- e) Define the term Skew: With an illustration in each case discuss the different types of skewness (5 mks)
- f) In an examination a candidate scores the following percentage of marks;

Econ 271	Econ 232	Math 240	Math 241	STA 230
84	77	59	79	80

Find the candidates' weighted mean percentage given that weighted of 3, 4, 4, 5 and 2 respectively are allotted to the subject. Find also the coefficient of variation (8 mks).

QUESTION TWO (20 mks)

- (a) Prices per unit of items forming consumption bundle of an average middle class family in two periods and percentage of total family budget allocated to those items are given in the following table.

	Food	Rent	Clothing	Miscellaneous
Percent Expenditure	50	30	10	10
Price in period 0	150	50	120	60
Price in Period 1	180	70	130	90

- Compute the consumer price index and comment on the result (5 mks)
- (b) Define Index numbers: Explain different types of index Numbers. State the uses and limitation of index numbers (7 mks)

(c) From the data given below calculate the fishers' ideal index

(8 mks)

commodity	2015		2016	
	Price (\$)	Quantity (Kgs)	Price (\$)	Quantity (Kgs)
A	12	24	14	42
B	14	18	20	30
C	10	12	15	30
D	8	4	6	4

QUESTION THREE (20 mks)

The following data represents the number of crates of soda sold by a businesswoman in some consecutive 60 days

32 36 41 31 41 33 42 31 41 45
48 27 46 47 31 42 44 41 36 37
34 42 45 31 28 39 51 64 53 38
27 49 48 47 32 55 39 52 38 54
33 35 37 47 28 36 37 38 56 59
46 26 46 31 35 61 65 64 72 64

- Draw up a frequency distribution table classified on the basis of marks with class intervals of 5, with the help of tally marks (4mks)
- Come up with a stem and leaf plot and comment on the distribution (4mks)
- Using a suitable working mean, calculate the mean number of crates sold (4 mks)
- Calculate the mode, median and Interquartile range of the data (8 mks)

QUESTION FOUR (20 mks)

- (a) Explain any four uses and limitation of using statistics to a business organization (4 mks)
- (b) The first two moments of a distribution about the value 5 are 2 and 20. Find the mean and variance of the distribution (4 mks)
- (c) Calculate the Spearman's Rank Correlation Coefficient using the set below (6 mks)

Width (cm)	0	6	12	18	15	24	30	36	42	48
Depth (cm)	1	10	28	42	39	51	50	55	64	76

- (d) The number of street children in Nairobi and Mombasa over 5 years is as shown below:-

Year	2005	2006	2007	2008	2009
Nairobi	90	126	183	169	174
Mombasa	82	99	135	111	102

Draw a bar chart to represent the above information (6 mks)

QUESTION FIVE (20 mks)

The production Manager of Alpha group of companies with seven operating plants of similar size producing small components has observed the following patterns of expenditure on inspection and defective parts delivered to the customer.

Observation number	Inspection expenditure per 1000 unit (£)	Defective parts per 1000 units delivered
1.	25	50
2.	30	35
3.	15	60
4.	75	15
5.	40	46
6.	65	20
7.	45	28

- a) The manger is wondering how strong the relationship is between inspection expenditure and the number of faulty items delivered. Use the product moment to confirm the strength of relationship if it exists (8 mks)
- b) Fit a regression model of inspection expenditure against the number of faulty items and determine the number of faulty items if the cost of expenditure per 1000 units is £32(12 mks)