KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS

2017/2018 ACADEMIC YEAR

FIRST YEAR FIRST SEMESTER

SPECIAL/ SUPPLEMENTARY EXAMINATION

FOR THE DEGREE OF BACHELOR OF SCIENCE AND BACHELOR OF EDUCATION

MATHEMATICS

COURSE CODE: STA 141

COURSE TITLE: INTRODUCTION TO STATISTICS

DATE: 04/10/18   **TIME:** 11.30 AM -1.30 PM

INSTRUCTIONS TO CANDIDATES
Answer Question One and Any other TWO Questions

TIME: 2 Hours

Question 1 (30 marks)

a) Define the term "Measure of dispersion" (1 mk)

b) Differentiate between the following terms
   (i) Primary data and secondary data (2 mks)
   (ii) Deductive statistics and inductive statistics (2 mks)
   (iii) Discrete variable and continuous variable (2 mks)
   (iv) Nominal data and Ordinal data (2 mks)

c) Discuss with illustrations for basic methods of data presentation in statistics (4 mks)

d) State four characteristics of a good statistical measure (4 mks)

e) Highlight uses and limitations of using statistics in data analysis (7 mks)

f) The data below shows ages (X) and blood pressure (Y) of 8 persons.

X: 52   63   45   36   72   65   47   25

Y: 62   53   51   25   79   43   60   33

Obtain the regression equation of Y on X. Find the expected blood pressure of a person aged 49 years

Question 2 (20 marks)

a) Why do we study measures of variation? (2 mks)

b) Define the term "Range" and highlight its disadvantages as a measure of dispersion (3 mks)

c) The mean height of 25 male workers in a factory is 61 inches and the mean height of 35 females in the same factory is 58 inches. Find the combined height of the workers in the factory (3 mks)

d) The following data relates to daily bills (in Ksh) on consumption of a certain commodity for 60 households

Daily bills (Ksh)	10 – 20	20 – 30	30 -40	40 -50	50 – 60	60 – 70	70 – 80	80 - 90
Number of households	6	7	11	10	6	5	9	3

Required: calculate
   i) Mean (2 mks)
   ii) Median (2 mks)
   iii) Standard deviation (3 mks)
   iv) Coefficient of variation (2 mks)
   v) Karl Pearson degree of skewness (3 mks)

Question 3 (20 marks)

a) Define the term "Linear regression" as used in statistics (2 mks)

b) Explain any two merits of using rank method in studying correlation (2 mks)

c) State four objectives of data (2 mks)

d) The following data was obtained during a social survey conducted in a given urban area regarding the annual income of given families and the corresponding expenditures

Family	A	B	C	D	E	F	G	H	I	J
Annual Income Ksh '000'	420	380	520	610	400	320	280	410	380	300
Annual expenditure Ksh '000'	360	390	510	500	360	290	250	380	240	270

Required

(i) Calculate the product moment correlation coefficient (7 mks)
(ii) Using spearman rank method briefly comment on the value obtained (7 mks)

Question 4 (20 marks)
a) What is an index number (1 mk)
b) State the importance and limitations of using index numbers in data analysis (6 mks)
c) Highlight four factors that must be considered in construction of indices (2 mks)
d) The Table below shows the fees in '00" charged by a college on four course categories and their corresponding number of students in a class for the academic years 2014 and 2015

Course category	2014		2015	
	Fees in (Ksh'00')	No. of students	Fees (Ksh'00')	No. of students
Business	300	35	360	40
Hospitality	250	30	300	35
Computer	600	25	750	30
Engineering	900	22	1000	25

Required: Calculate the following taking 2014 as base year

(i) Laspeyre's price index (3 mks)
(ii) Paasche's price index (3 mks)
(iii) Value index (2mks)
(iv) Marshalls edgeworth (3 mks)

Question 5 (20 marks)
a) Use the data below to construct:
(i)   Frequency distribution (5 mks)
(ii)   Histogram and estimate the modal value (5 mks)
(iii) Frequency polygon (2 Mks)
(iv)   Stem and leaf plot (2 mks)

57	67	72	57	83	76	74	56	68	67
74	76	79	72	61	72	73	76	67	49
71	53	67	65	98	83	69	61	72	68
65	75	68	75	66	77	61	64	74	51

b) Using the frequency distribution in (a) (i) obtain Coefficient of quartile deviation (6 mks)