



MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE WITH INFORMATION TECHNOLOGY

MAIN CAMPUS

MAS 101: DESCRIPTIVE STATISTICS

Date: 9th December, 2016

Time: 3.30 - 6.30 pm

INSTRUCTIONS:

- Answer question ONE and any other TWO questions.
- Start each question on a fresh page.
- Indicate question numbers clearly at the top of each page.
- Scientific calculators may be used.
- Observe further instructions on the answer booklet.



MAS 101/102: DESCRIPTIVE STATISTICS

INSTRUCTION

Answer Question ONE and TWO other Questions

QUESTION ONE (30MKS)

- a). Calculate standard deviation, range and interquartile range for the following set of observations:

5.1, 2.6, 7.3, 4.4, 4.6, 2.9, 3.4, 3.2, 4.4, 5.0 [6mks]

- b). For a given set of data $\sum x = 15$, $\sum x^2 = 55$, $\sum y = 43$, $\sum y^2 = 397$
 $\sum xy = 145$, $n = 5$

Find the equation of the regression line y on x. [4mks]

- c). In a survey the masses of 50 apples were noted and recorded in the following table. Each value was given to the nearest gram.

86	101	114	118	87	92	93	116
105	102	97	93	101	111	96	117
100	106	118	101	107	96	101	102
104	92	99	107	98	105	13	100
103	108	92	109	95	100	103	110
113	99	106	116	101	105	86	88
108	92						

- i. Construct a frequency distribution, using equal class intervals of width 5g and taking the first intervals as 85-89. [6mks]

Use the table to :

- ii. Find the mean [3mks]

Estimate:

- iii. Median [3mks]

iv. Interquartile range [4mks]

c). Define the following terms: [4mks]

- i. Statistics
- ii. Sample
- iii. Population
- iv. Kurtosis

QUESTION TWO (20MKS)

Discuss the four components of a time series. [8mks]

The data below shows the number of packets of French beans picked weekly from a shamba in 10 weeks

Week	1	2	3	4	5	6	7	8	9	10
No of packet	3	3	10	13	16	14	12	9	7	6

- a. Plot the data on graph [3 mks]
- b. Calculate the three- weeks moving averages [4mks]
- c. Plot the three-week moving averages against weeks on the same axis as in (a) above [3mks]
- d. The price of beef in 1985 was sh.16 per kg and in 1986 was sh. 30. Calculate. The price index with 1985 as a base [2mks]

QUESTION THREE (20MKS)

a). The table shows the frequency distribution of the masses of 52 women students at a college. Measurements have been recorded to the nearest kilogram.

Mass	40-44	45-49	50-54	55-59	60-64	65-69	70-74
Frequency	3	2	7	18	18	3	1

- i. Construct cumulative frequency table and draw cumulative frequency curve [4mks]

- ii. How many students weighed less than 57kg. [1mk]
 - iii. How many students weighed more than 61kg [1mk]
 - iv. 70% were heavier than xkg. Find the value of x. [2mks]
 - v. Estimate the median [1mk]
 - vi. Estimate the interquartile range [3mks]
- b). 150 applicants for the post of secretarial position in a large company made the following scores on a clerical test:

Score	frequency
10-19	1
20-29	6
30-39	9
40-49	31
50-59	42
60-69	32
70-79	17
80-89	10
90-99	2

By using assumed mean of 54.5, determine:

- i. Mean score [3mks]
- ii. Standard deviation [3mks]
- iii. Coefficient of variations [2mks]

QUESTION FIVE (20MKS)

- a). Twelve students were given a prognostic test at the beginning of a course and the scores X in the test were compared with their scores Y obtained in an examination at the end of the course. The results were as follows.

Student	A	B	C	D	E	F	G	H	I	J	K	L
X	1	2	2	4	5	5	6	7	8	8	9	9
Y	3	4	5	5	4	8	6	6	6	7	8	10

Determine the Pearson product-moment correlation coefficient. [5mks]

- b). The marks of eight candidates in English and mathematics are

Candidate	1	2	3	4	5	6	7	8
English	50	58	35	86	76	43	40	60
Math	65	72	54	82	32	74	40	53

Rank the results and hence find Spearman's rank correlation coefficient between the two sets of marks. Comment on the value obtained. [5mks]

- d). The following table shows the time, to the nearest minute, spent reading during a particular day by a group of school children.

Time	10-19	20-24	25-29	30-39	40-49	50-64	65-89
Number of children	8	15	25	18	12	7	5

- i). Represent the data by a histogram and comment on the shape of the distribution. [4mks]
- ii). Find Pearson's coefficient of skewness [6mks]