



MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ECONOMICS

SECOND YEAR SEMESTER EXAMINATION FOR

BACHELOR OF ECONOMICS & STATISTICS

EES 201: STATISTICS FOR ECONOMICS I

DATE:

TIME:

INSTRUCTIONS: Answer Question ONE and any other TWO questions

QUESTION ONE: COMPULSORY (30 MARKS)

- a) Explain briefly FOUR characteristics of a Normal Distribution. (4 marks)
- b) Differentiate between functions and uses of statistics (5 marks)
- c) In the probability of multiple events, explain what you understand by the following terms:
- i) Mutually exclusive events, (1 mark)
 - ii) Collectively exhaustive events, (1 mark)
 - iii) Independent Events, and (1 mark)
 - iv) Complementary Events. (1 mark)
- d) In class of 15 student of economics and statistics wrote a test and results of this test are summarized as follows:

12	12	10	11	9	13	12	15
11	13	7	12	11	9	10	

Calculate the following:

- i) Mean for this set of data. (3 marks)
 - ii) Median for this set of data. (2 marks)
 - iii) Mode values for this set of data. (2 marks)
- e) Using examples, describe the difference between a sample and a population. (4 marks)

f) Define the following terms:-

(6 marks)

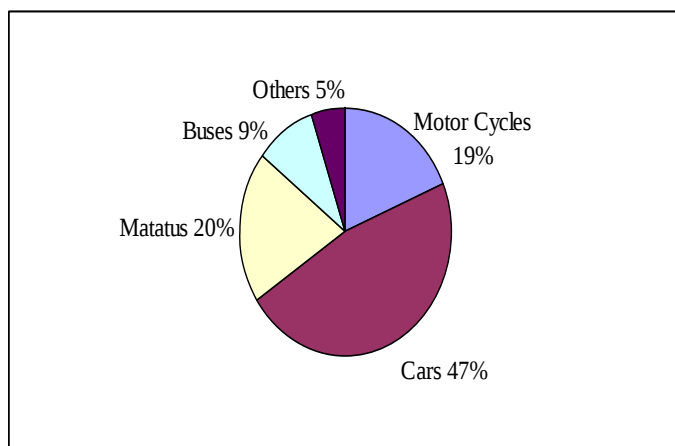
- i) Ogive curves
- ii) Lorenz curve
- iii) The Z chart

QUESTION TWO (20 MARKS)

a) The table below represents an extract of raw data of ages in a small village in Mandera County.

49	41	45	53	47	46	48	42	43	46
45	36	56	44	61	68	54	58	51	47
47	49	42	48	53	48	41	65	45	52
58	50	55	45	43	72	63	45	38	43
42	47	43	49	46	57	49	44	47	48

- i) Using the age data in the table from Mandera County, construct Frequency Table (8 marks)
 - ii) Calculate the mean age in this village (2 marks)
- b) Describe two types of data giving example (2 marks)
- c) Study the pie chart below and make a table of the observation assuming that total vehicles observed were one million. (4 marks)



- d) Define the following terms as used in statistics studies (4 marks)
- i) Arithmetic mean
 - ii) Standard deviation
 - iii) Coefficient of variation
 - iv) Mode

QUESTION THREE (20 MARKS)

- a) Assume you are the student in-charge of sickness and absence records, and that you kept records on 30 students in class over a 91-day period. The data for your records are tabulated below:

Number of officers absent	0	1	2	3	4	5
Number of days	44	19	10	8	7	3

- i) Calculate the sample mean of the number of officers absent. (5 marks)
 - ii) Calculate the standard deviation of the number of officers absent per day. (5 marks)
- b) Explain briefly characteristics of a Normal Distribution data (5 marks)
- c) In efforts to investigate credit card defaulter, the Chief Risk Officer of Equity Bank has found that 10% of their card users do not pay the full amount of indebtedness during any given month. Calculate the probability that if 20 accounts are randomly selected, 5 of them are not paid. (5 marks)

QUESTION FOUR (20 MARKS)

- a) The estimates of individuals involved in destruction of private property in the aftermath of political chaos in 7 different towns are tabulated in the table below.

Town	Number of individuals involved
Thika	57
Nyeri	10
Kakamega	61
Kisumu	58
Mombasa	5
Nairobi	59
Nakuru	16

Use the information to construct

- i) bar graph. {No need to use a graph paper}. (6 marks)
 - ii) pie chart (4 marks)
 - iii) Mean deviation (3 marks)
 - iv) Standard deviation (3 marks)
- b) There are number of ways to define collecting data. Briefly describe them. (4 marks)

QUESTION FIVE (20 MARKS)

- a) The Nairobi County security department intends to install new equipment which will improve the efficiency of their operations to deal with the raising insecurity in the CBD. It has been found that, on average telephone message is 150 seconds, with a standard deviation of 15 seconds. However, before they can decide if such an investment would be cost effective, they must determine the probability that the mean of a sample of 35 calls will be:
- i) Between 145 and 150 seconds, (5 marks)
 - ii) Between 145 and 155 seconds, and (3 marks)
 - iii) Greater than 155 seconds. (4 marks)
- b) A GM plant producing Dello car batteries designed to detect and eliminate defective products uses 2 separate work shifts, in the morning (8.00 A.M. – 4.40 P.M) and evening (5 – midnight) to produce batteries. The quality control department regularly tests samples of these batteries after they have set dormant for at least 6 months to determine whether they would have a charge. The morning shift produces 65 % of all the batteries and evening shift the other 35 %. Previous examinations by the quality control have revealed that 5 % of the batteries produced by the morning shift are defective while the evening shift has a defective rate of 8%. During the spot checks, the plant manager selects one battery and tests it himself. The last battery checked was found to be defective. The manager wanted to know which shift was more likely to have produced that defective battery. (4 marks)