



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICS, STATISTICS AND ACTUARIAL SCIENCE

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATIONS FOR
BACHELOR OF SCIENCE (COMMUNITY RESOURCE MANAGEMENT)
BACHELOR ARTS

ASC 102-SOCIAL STATISTICS 1

DATE:

TIME:

INSTRUCTION: Attempt question ONE and any other TWO questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Explain the meaning of the following terms as applied in Statistics
- i) Population
 - ii) Sample
 - iii) Variable
 - iv) Data (4 marks)
- b) i) Differentiate between each of the following terms:
- i) Descriptive and inferential statistics
 - (ii) Nominal and interval measurement (4 marks)
- ii) The ages of 5 students were recorded as 26, 29, 24, 23 and 28 years. The mean is 26 years. It was however noted that an error occurred in one of the students' age recorded as 23 years instead of 28 years. Determine the correct mean age of the 5 students after the error was corrected. (3 marks)

- c) i) The following frequency distribution the median is 59.5 and the ninetieth` percentile is 79.5
Determine the values of a , b and c

<u>CLASS</u>	<u>FREQUENCY</u>
30 – 39	14
40 – 49	a
50 – 59	40
60 – 69	b
70 – 79	19
80 – 89	c

$$\sum f = 150 \quad (10 \text{ marks})$$

- ii) Define the following terms as used in statistics:

(i) Quantiles

(ii) Range (4 marks)

- iii) Two true six-sided dice are rolled; what is the probability of a total score of 10.(5 marks)

QUESTION TWO (20 MARKS)

- a) Explain the meaning of the following sampling techniques:-

(i) Random sampling

(ii) Stratified sampling

(iii) Quota sampling

(iv) Cluster sampling (8 marks)

- b) The data below shows the performance in a statistics continuous assessment test:

Score in %	0 -20	20 - 40	40 – 60	60 - 80	80 – 100
No of Students	3	9	11	15	2

Calculate:-

i) The mean (4 marks)

ii) The standard deviation (4 marks)

iii) The mode (4 marks)

QUESTION THREE (20 MARKS)

The analysis of a local NGO order gave the following value of orders received, values being recorded to the nearest (£)

47	80	43	52	45	54	52	69
56	82	55	48	56	59	58	68
64	81	60	58	62	62	62	72
67	83	66	61	66	69	69	60
72	86	70	67	71	74	73	63
77	89	75	72	76	79	78	68

- i) Tabulate the data into a frequency table using intervals of £5. (10 marks)
- ii) Use the table in a(i) above to estimate the quartile deviation. (10 marks)

QUESTION FOUR (20 MARKS)

- a) The data below relates to females as a percentage of total economically active and divorce rates per 100,000 populations in some countries.

Country	Females as % total Economically active	Divorce rate
Canada	37	113
Brazil	33	68
France	40	193
China	37	124
Germany	26	64
USA	26	74
Russia	39	93

Compute the product moment correlation co-efficient between females as a percentage of economically active and divorce rates. (10 marks)

- b) The data below shows Gross weekly earnings of employees of a local CBO by age in 2002.

Age (years)	Median weekly earnings (£)
18	15.50
20	23.20
22	34.0
27	44.90
35	53.10
45	55.00
55	51.20

Calculate the least squares regression line of median weekly earnings on age. (10 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the meaning of terms as used in probability theory.
- i) Random experiment
 - ii) An event
 - iii) Mutually exclusive events
 - iv) Independent events. (8 marks)
- b) 100 members of a social club were questioned on whether they smoked or not. There were equal numbers of males and females. Half the males smoked and 40% of the females smoked. Find the probability that if one of the members were chosen at random.
- i) The person was a smoker (3 marks)
 - ii) The person was a female. (3 marks)
 - iii) The person was a female that smoked (3 marks)
 - v) The person was a female given that the person selected was a smoker. (3 marks)