



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2013/2014

FIRST YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE OF MASTER OF EDUCATION
(HOMA BAY CAMPUS)

**EDU 803: EDUCATIONAL STATISTICS & COMPUTER
APPLICATION**

Date: 16th April, 2014

Time: 9.00 - 12.00 noon



MASENO UNIVERSITY
EDU 803: EDUCATIONAL STATISTICS &
COMPUTER APPLICATION
(HOMABAY)

SECTION 1: EDUCATIONAL STATISTICS

INSTRUCTIONS: Answer any TWO Questions from this section. You are provided with table and graph papers

Q1. Given the following variables X and Y

Variable X 61 60 41 22 21

Variable Y 56 61 36 21 26

(i) Calculate the relationship using Pearson's product moment Correlation – coefficient. **(12marks)**

(ii) Determine if the calculated value is significant **(3marks)**

Q2. The following scores were obtained when a group of 12 students were tested on two tests. Test A and Test B.

Test A 6 6 8 9 7 10 8 9 12 10 11 12

Test B 6 7 8 8 9 9 10 10 11 12 13 14

(i) Plot a scatter diagram for the above data (use graph paper). **(3marks)**

(ii) Compute the spearman correlation co-efficient (rho) for the above data. **(10marks)**

(iii) Determine if the calculated value is significant at $p \leq 0.01$ and 0.05 level of significance **(2marks)**

Q3. From the list of data given below:

23 17 29 23 27 23 15 21 26 27 29 22 19 21 20
26 24 34 25 17 32 26 24 33 27 32 35 31 28 22
24 28 20 25

- (i) Make a cumulative frequency above and below for each class interval (i=3). **(3marks)**
- (ii) Plot (on graph papers) a histogram and frequency polygon for the data in Q 3(i) above). **(10marks)**
- (iii) Comment on the distribution of the scores, whether positively or negatively skewed. **(2marks)**

SECTION 1: COMPUTER APPLICATION

INSTRUCTIONS: Answer any 3 questions

Question 1:

- a) A researcher is interested in determining whether **Students' Gender (Boy or Girl)** is associated with **preference for subject choice (Geography or History)** and collected the following data from a sample of 15 teachers.

Table 2: Teachers and Teaching Subject

No	Students' Gender	subject choice
1.	Boy	Geography
2.	Girl	History
3.	Girl	Geography
4.	Boy	Geography
5.	Girl	History
6.	Boy	History
7.	Girl	Geography
8.	Girl	History
9.	Boy	Geography
10.	Boy	Geography
11.	Girl	History
12.	Girl	History
13.	Boy	Geography
14.	Girl	History
15.	Girl	History

- i. Enter the data into the SPSS data editor and print (4 marks)
- ii. Analyze sample data using SPSS to:
 - a. Analyze sample data using Pearson's Chi-square test (Chi-square test of association) (χ^2) to find out whether there is association between **Teachers' Gender (Boy or Girl)** and **teaching Subject (Geography or History)** (4marks)
 - b. Produce an output of display of clustered bar charts for **Teachers' Gender (Boy or Girl)** and **teaching Subject** (2marks)

Question 2:

1. The following is a sample of **18 students** and their performance in a Chemistry test.

Table 2: Student's performance in a Chemistry test

NO.	Marks	Gender	NO.	Marks	Gender
1	75	Boy	10	66	Girl
2	58	Girl	11	56	Boy
3	79	Boy	12	54	Girl
4	60	Boy	13	55	Boy
5	56	Girl	14	49	Girl
6	56	Boy	15	53	Girl
7	65	Girl	16	54	Boy
8	61	Boy	17	48	Girl
9	48	Girl	18	58	Boy

- a) Enter the data into the SPSS data editor and print. (3 marks)
- b) Analyze sample data using SPSS to:
- Find the means, mode, standard deviation, maximum, minimum, kurtosis of the samples. (3marks)
 - Give output of a pie charts to show the distributions of the students by gender (1 marks)
 - Use an appropriate statistical test to find out whether the mean difference performance in Chemistry tests between boys and girls statistically significant. $p = 0.05$ (4marks). (3 marks)

Question 3:

Some 13 students sat for Mathematics Examinations Paper 1 and Paper 2 and their records of performance were as shown.

Table 3 : Student Performance in Mathematics Examination

Student	Paper 1(x_1)	Paper 2 (x_2).
1	58	62
2	60	64
3	57	63
4	58	57
5	56	58
6	63	59
7	58	63
8	60	61
9	76	58
10	62	56
11	73	59
12	58	61
13	59	64

- i. Enter the data into the SPSS data editor and print. (3 marks)
- ii. Analyze sample data using SPSS to:
 - a) Find the means, mode, standard deviation of the two samples (x_1, x_2) (2marks)
 - b) Give outputs of a histograms with a normal curves to show the distributions the two samples (x_1, x_2). (2 marks)
 - c) Use an appropriate statistical test to find out whether the mean difference **Paper 1(x_1)** and **Paper 2 (x_2)**.is statistically significant. $p = 0.05$ (3 marks)

Question 4:

The data in **Table 4** is for a study a county school to compare the students' performance from three sub counties (A, B and C) in KCPE examinations.

Table 4: Students' performances in KCPE examinations.

NO	SUB COUNTY	student performance in KCPE
1.	B	365
2.	A	362
3.	C	367
4.	B	356
5.	A	358
6.	C	361
7.	A	363
8.	B	372
9.	A	369
10.	C	366
11.	B	362
12.	B	351
13.	A	349
14.	C	352
15.	C	356

- i. Enter the data into the SPSS data editor and print **(3marks)**
- ii. Give an output of a pie chart to show the distributions of the students by **sub-counties.** **(2 marks)**
- iii. Analyze sample data using:
 - a. ANOVA , giving the descriptive analysis and find out if the test is statistically significant at $p = 0.05$ **(2 marks)**
 - b. Tukey post hoc analysis to show the significance of the difference in **student performance in in KCPE examinations** amongst the 3 **sub-counties**

(3 marks)

Question 5:

- a) The Table 5 shows the CAT(x) scores and End Term Exam(y) scores of a sample of 12 students.

Table 5: The CAT(x) scores and End Term Exam(y) scores of a sample of 12 students.

CAT(x)	62	52	72	46	63	57	55	59	48	42	68	60
End Term Exam (y)	247	225	260	218	249	228	250	245	215	240	252	255

- i. Enter the data into the SPSS data editor and print (3 marks)
- ii. Use SPSS to ::
 - a) Find Pearson's Product-Moment Correlation coefficient (r) and describe the nature of relationship between CAT(x) and End Term Exam (y) (2 marks)
 - b) Obtain a scatter diagram of the data CAT(x) scores and End Term Exam (y) scores (2 marks)
 - c) Perform a simple regression analysis and determine the Least Squares Regression Line equation of Y on X (3 marks)