MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2013/2014

FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF MASTER OF ARTS IN PROJECT PLANNING AND MANAGEMENT

(HOMA BAY CAMPUS)

APP 802: QUANTITATIVE TECHNIQUES

Date: 8th December , 2013 *Time: 9.00 - 12.00 noon*

INSTRUCTIONS:

- **Answer ANY FOUR questions.**

APP 802: QUANTITATIVE TECHNIQUES [HOMABAY CAMPUS]

INSTRUCTIONS: Answer any FOUR Questions

1. The annual rainfall at Kibos and Maseno Meteorological stations are as follows:

Kibos (mm)	1657	1804	1703	1502	1579	1901	1744	1696
Maseno (mm)	1534	1599	1692	1453	1509	1852	1756	1603

(a) Calculate the range, variance and standard deviation.**(9 Marks)**

(b) Why is standard deviation a better measure of variability than range? **(6 Marks)**

2. (a) The procedure of testing hypothesis requires a researcher to adopt several steps. Describe in brief all such steps. **(7 Marks)**

(b) What characteristics must a hypothesis posses in order to be a good research hypothesis? **(8 Marks)**

3. Three boys, X, Y and Z were asked to estimate by hand the weights o f six objects and arrange them in descending order. The weights in Kilograms were: A, 35; B, 32; C, 30; D, 30; E, 28 and F, 26. The order in which they were placed by each boy is shown below:

	A	B	C	D	E	F
X	1	3	2	4	6	5
Y	1	2	5	4	6	3
Z	2	1	4	3	6	5

Calculate the co-efficient of rank correlation in order to decide:

i. Which boy is the best judge? **(6 Marks)**

ii. Which two boys are most in agreement? **(6 Marks)**

iii. Comment briefly on any interesting feature of your results. **(3 Marks)**

4. Maseno University clinic has developed a test designed to measure a patient's stress level. This test is designed so that higher scores on the test correspond to higher levels of stress. As part of a research study, the blood pressure of patients who took the test was recorded. The following results were obtained:

Stress Test Score	**Blood Pressure**
53	70
94	91
64	78
73	78
82	85
90	84

(a) Develop a scatter diagram for these data with stress scores on the horizontal axis. Does a linear relationship between the two variables appear to be appropriate? **(3 Marks)**

(b) Develop the estimated least square line for these data. **(7 Marks)**

(c) Estimate an individual's blood if he/she scored 85 on the stress test. **(5 Marks)**

5. Three brands of paper towels were topped for their ability to absorb water. Equal sized towels were used; with four sections of towels tested per brand. The absorbency rating data are given. Using 0.05 level of significance, does there appear to be a difference in the ability of the brands to absorb water? **(15 Marks)**

Brand	Absorbency Rating			
X	91	100	88	89
Y	99	96	94	99
Z	83	88	89	76

6. The selling prices of six second hand bicycles in relation to their ages were noted in the Daily Standard Newspaper's advertisement. The details are given in the table below:

Age x (years)	4	10	2	1	3	4
Price y (Ksh. 000')	9	1	14	18	12	7

(a) Draw a scatter diagram to illustrate the data. **(3 Marks)**

(b) Calculate the value of the product moment correlation co-efficient and state what you infer from its value. **(12 Marks)**