MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

FOURTH YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION WITH INFORMATION TECHNOLOGY

HOMA-BAY CAMPUS

ABA 402: QUANTITATIVE METHODS IN BUSINESS II

Date: 11th December, 2016   Time: 9.00 - 12.00 noon

INSTRUCTIONS:

- Answer question ONE and any other TWO questions.
- Marks allocated are shown at the end of each question.
- Neatness is vital.

SECTION A: Compulsory.
QUESTION ONE (30 MARKS)

a) Explain the main roles of sensitivity analysis on optimal solution.

(3 marks)

b) (i) Give a mathematical model of transportation problem (4marks)

(ii) Explain briefly with example: (6 marks)

1. North West Corner Rule

2. Vogel's Approximation Method

c) (i) Explain the meaning of correlation. (3 marks)

(ii) Give *any four* significance of correlation. (8 marks)

d) Identify *any three* uses of regression analysis (6 marks)

SECTION B: Answer Any Two Questions.

QUESTION TWO (20 MARKS)

a) What is an assignment problem? Hence discuss the various steps involved in solving assignment problem. (5 marks)

b) Four jobs are to be allocated to four machines in accordance with the information given below, which relates to the time each machine would take to complete each job.

JOB		Machines (Time in minutes)			
		1	2	3	4
	A	10	28	20	13
	B	16	30	7	28
	C	33	22	21	17
	D	21	29	27	12

Required: (15 marks)

Find out the allocation of time to four machines which minimises total running time.

QUESTION THREE

a. What is Coefficient of Determination? How is Coefficient of Determination obtained?   (5 marks)

b. Find the Coefficient of Correlation between the use of fertilizers and productivity from the following figures: (15marks)

Fertilizers used (tonnes)	15	18	20	24	30	35	40	45
Productivity of land(tonnes)	85	93	95	105	120	130	150	160

QUESTION FOUR

e) Give *any four* differences between Correlation and Regression.

(8 Marks)

f) The following table show the various data of X and Y variables:

X	1	2	3	4	5
Y	2	5	3	8	7

Required:

i. Calculate regression equation of X on Y   (6marks)

ii. Calculate regression equation of Y on X   (6marks)

QUESTION FIVE

a) Explain the following terms.   (6 marks)

    i. Slack variables

    ii. Surplus variable

    iii. Unrestricted variables

b) A manufacturer produces three types of plastic fixtures. The time required for moulding, trimming, and packaging is given in the table below.

Process	Type A	Type B	Type C	Total time available
Moulding	1	2	3/2	12,000
Trimming	2/3	2/3	1	4,600
Packaging	1/2	1/3	1/2	2,400
Profit	Kshs. 11	Kshs. 16	Kshs. 15	

Required:

i. Formulate the mathematical model   (4marks)

ii. How many of each type of fixture should be produced to obtain a maximum profit?   (10marks)