GARISSA UNIVERSITY

UNIVERSITY EXAMINATION 20117/2018 ACADEMIC YEAR ONE FIRST SEMESTER EXAMINATION

SCHOOL OF BUSINESS AND ECONOMICS

FOR THE DEGREE OF MASTERS OF BUSINESS ADMINISTRATION

COURSE CODE: MBA 804

COURSE TITLE: QUANTITATIVE METHODS OF MANAGEMENT

EXAMINATION DURATION: 3 HOURS

DATE: 11/12/17 **TIME: 2.00-5.00 PM**

INSTRUCTION TO CANDIDATES

- **The examination has FIVE (5) questions**
- **Question ONE (1) is COMPULSORY**
- **Choose any other THREE (3) questions from the remaining FOUR (4) questions**
- **Use sketch diagrams to illustrate your answer whenever necessary**
- **Do not carry mobile phones or any other written materials in examination room**
- **Do not write on this paper**

This paper consists of THREE (3) printed pages ***please turn over***

QUESTION ONE (COMPULSORY)

(a) Explain the assumptions of Anova **[3 marks]**

(b) Discuss the properties of a good estimator **[4 marks]**

(c) An automatic Shaw machine fills plastic bags with a mixture of beans broccoli, and other vegetables. Most of the bags contain the correct weight, but because of the slight variation in the size of the beans and other vegetables, a package might be slightly underweight or overweight. A check of 4,000 packages filled in the past month revealed:

Weight	Event	No. of Packages	Probability of Occurrence
Underweight	A	100	0.025
Satisfactory	B	3600	0.900
Overweight	C	300	0.075

What is the probability that a particular package will be either underweight or overweight **[4 marks]**

(d) Differentiate between Surplus variable and slack variables **[2 marks]**

(e) Outline and explain the elements of decision theory **[2 marks]**

QUESTION TWO

Maximize $Z = 14x + 12y$

Sub to: $3x + 2y \leq 8$

$2x + 4y \leq 8$

And $x \geq 0, y \geq 0$ **[15 marks]**

QUESTION THREE

(a) Discuss the characteristics of F- distribution **[10 marks]**

(b) Using the information given, calculate F value and comment **[5 marks]**

Route	Mean Time (min)	Standard deviation	Sample Size
U.S. 25	56	12	7
I-75	58	5	8

QUESTION FOUR

(a) The mean lifetime of a sample of 100 light tubes produced by a company is found to be 1570 hours with standard deviation of 80 hrs. Test the hypothesis that the mean lifetime of the tubes produced by the company is 1,600 hrs **[9 marks]**

(b) Make notes on the following

i. Acceptance and rejection region **[2 marks]**

ii. Type I and Type II Errors **[2 marks]**

iii. The significance level **[2 marks]**

QUESTION FIVE

(a) Discuss the assumptions of simple linear regression **[6 marks]**

(b) Reliable furniture is a family business that has been selling to retail customers in the Gikomba area for many years. They advertise extensively on radio and TV; emphasizing their low prices and easy credit terms. The owner would like to review the relationship between sales and the amount spent on advertising. Below is information on sales and advertising expenses for the five observations.

Advertising Expense Million (Kshs)	4	5	3	6	10
Sales Revenue Million (Kshs)	4	6	5	7	7

Determine the coefficient of correlation and the coefficient of determination. Interpret

[9 marks]