



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FOURTH YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (.....)

SMA468: STATISTICAL COMPUTUTING

DATE:

TIME:

INSTRUCTIONS:

Answer Question One And Any Other Two Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Explain R programming language and its two applications. [3 marks]
- b) Write syntax of Matrices in R programming language. [2 marks]
- c) Explain how you can start the R programming commander GUI. [2 marks]
- d) Explain three ways on how you can import Data in R programming. [3marks]
- e) Explain how R programming commands are written. [2 marks]
- f) Explain how you can save your data in R programming. [2 marks]
- g) Explain how you can produce co-relations and covariances in programming. [2 marks]
- h) Explain the significance of **t-tests** in programming. [2 marks]
- i) Explain the use of With () and By () functions in R programming. [2 marks]
- j) Describe three data structures in R that is used to perform statistical analyses and create graphs. [3marks]
- k) Describe how to merge two dataframes in R programming language. [3marks]
- l) Citing examples differentiate between decision making and looping statements in R programming [4 marks]

QUESTION TWO [20 MARKS]

- a) Using a code describe how to measure the central tendency of the given data using R programming. [6 marks]
- b) Describe how to plot Cause and Effect Diagram in R programming. [7 marks]
- c) Describe the functions available in R programming and explain how to define a function and call the same using examples. [7 marks]

QUESTION THREE [20 MARKS]

- a) Describe four types of operators available in R programming. [8 marks]
- b) Explain how to use apply, sapply, lapply, tapply functions in R programming. [6 marks]
- c) Explain how to resolve missing data or Missing Values in R programming. [6 marks]

QUESTION FOUR [20 MARKS]

- a) Discuss how to implement Area Chart using ggplot2 in R programming. [5 marks]
- b) Describe four functions used to implement normal distribution in R programming. [4 marks]
- c) Describe and write a code on how to implement rank, order and sort function in R programming. [6 marks]
- d) Describe how to implement Time Series Modeling and Forecasting for the R inbuilt datasetAirPassengers in R Programming. [5 marks]

QUESTION FIVE [20 MARKS]

- a) Describe the six steps on how to cluster customers into groups based on shopping behaviour using Clustering Algorithm in R programming. [6 marks]
- b) Using a code describe how to implement cbind, rbind and merge function in R programming. [9 marks]
- c) Describe how to implement Poisson distribution in R programming. [5 marks]