MAASAI MARA

UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR
THIRD YEAR FIRST SEMISTER EXAMINATION

SCHOOL OF SCIENCE AND INFORMATION SCIENCE
DEPARTMENT OF MATHEMATICS AND PHYSICAL SCIENCES
BACHELOR OF SCIENCE IN APPLIED STATISTICS WITH COMPUTING

COURSE CODE: STA 1209
COURSE TITLE: STATISTICAL COMPUTING AND DATA ANALYSIS

DATE: 29/4/2019 **TIME: 14:30 – 16:30 PM**

INSTRUCTIONS:

ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

This paper consists of 3 printed pages. Please turn over.

Section one(30 marks)

i). What are the following binary values in decimal? (4marks)
a) 0000101_2
b) 0001001_2
c) 0001101_2
d) 0010101_2

ii) Differentiate between the following terms as used in computer (6marks)

a) RAM and ROM
b) Compiler and CPU
c) Input and output devices

iii)Discuss what is meant by bit and how words and character are represented in a computer(5marks)

iv)Given the following data points be (0, 2) and (2,4) use polynomial $P_1(x)$ to represent this and sketch the curve (4marks)

v)Given $f(x) = \sin(x)$, $x_0 = 0.2$, $x_1 = 0.3$. use the first-order divided difference of f(x) to approximate cos(x) (3marks)

vi) Evaluate $f(x) = e^x$, $x\epsilon[0, 1]$ and consider the error in linear interpolation to f(x) using x_0, x_1 satisfying $0 < x_0 < x1<1$ (5marks)
vii)Differentiate between linear and nonlinear equation

(3marks)

QUESTION TWO(20 MARKS)

How are the following data processing concepts related:

a. Coding scheme vs. Data dictionary
b. . Data set vs. Database

c. FIat ASCII file vs. Hierarchical ASCII file

d. Editing for analysis vs. In-house editing

e. Value labels vs. Variable labels

QUESTION THREE (20 MARKS)

a) Use Newton's Method to determine x_2 for the given function and given value of x_0

i) $f(x)=x^3-7x^2+8x-3$, $x_0=5$

ii) $f(x)=x\cos(x)-x^2$, $x_0=1$

b) Using Newton's Method find the root of the given equation, accurate to six decimal places, that lies in the given interval.

i) $x^4-5x^3+9x+3=0$ in [4,6]

ii) $x^2+5=e^x$ in [3,4]

c)State the function of operating systems in a computer

QUESTION FOUR (20 MARKS)

a) Determine the Taylor Series for the given function.

1. $f(x)=\cos(4x)$ about $x=0$

2. $f(x)=x^6e^{2x}$ about $x=0$

3. $f(x)=e^{-6x}$ about $x=-4$

4. $f(x)=\ln(3+4x)$ about $x=0$

b) state fou software that can be used for data analysi

QUESTION FIVE

a) Discuss the numbers system in a computer ad using example illustrate how your convert numbers in a computer with reference to decimal number system.

b) Discuss the fundamental rules of coding in survey data processing.

//END