ALUPE UNIVERSITY COLLEGE

...Bastion of Knowledge...

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OFFICE OF THE DEPUTY PRINCIPAL
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2017 /2018 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER REGULAREXAMINATION

FOR THE DEGREE OF BACHELOR OF APPLIED STATISTICS WITH COMPUTING

COURSE CODE: STA 114

COURSE TITLE: COMPUTER APPLICATIONS FOR DATA ANALYSIS

DATE: 2NDMAY, 2018   **TIME: 9AM – 12.00 NOON**

INSTRUCTION TO CANDIDATES

- **SEE INSIDE**

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STA 114: COMPUTER APPLICATIONS FOR DATA ANALYSIS

STREAM: ASC   **DURATION: 3 Hours**

INSTRUCTIONS TO CANDIDATES

i.   *Answer Question TWO questions in section A and any other THREE questions in section B.*

ii.   *Maps and diagrams should be used whenever they serve to illustrate the answer.*

iii. *Do not write on the question paper.*

SECTION A (31 marks): Answer ALL questions.

QUESTION ONE (16 Marks)

(a) Define the following terms as used in Ms Access

(i) Data Item   (ii) Records   (iii) Field   [6Marks]

(b) SPSS provides tools such as SPPS Base, Advanced models Module and regressions Model

   Module, describe the role of each of the three aforementioned modules.   [6Marks]

(c) With the aid of an example, state the importance of analyzing data   [4Marks]

QUESTION TWO (15 marks)

a) Convert the following numbers respectively

   i)   Convert 11010001_2 to Octal   [2Marks]

   ii)   Convert 526_8 to binary   [2Marks]

b) Use Gaussian elimination to solve the system of linear equations   [4Marks]

$$2x_2 + x_3 = -8$$
$$x_1 - 2x_2 - 3x_3 = 0$$
$$-x_1 + x_2 + 2x_3 = 3$$

c) The yearly averages of K.S.C.E entries were tabulated as shown below.

   Find the estimate of missing terms.   [4Marks]

Year	2011	2012	2013	2014	2015	2016
No. of kcse entries	100	?	200	250	400	?

d) Express $\Delta^5 y_o$ in terms of $y_0, y_1, y_2 \dots$ [3Marks]

SECTION B (39 marks):

Answer any THREE questions. All Questions carry equal marks

QUESTION THREE (13 marks)

(a) Three characteristics that need to be specified under the columns of the variable view in

SPSS are name, type and width. Give the functions of each one of them.   [6Marks]

(b) State four (4) advantages and three (3) disadvantages of database management systems.

[7Marks]

QUESTION FOUR (13 marks)

a) Find the sum 1010_2 and -1100_2 using once complements   [3Marks]

b) i) Obtain four corresponding values of $x_{20}, x_{40}, x_{60}, x_{80}, x_{100}$ and x_{120} given the equation

$X_n = (1.02)^n X_O$ if $X_o = 100$.   [3Marks]

ii) Sketch a curve of X_n against the responding values of n.   [3Marks]

c) Compute the next 3 terms of each of the following sequences from the given information.

i) $X_o = 10, X_{n+1} = X_n + 4$ [1Marks]

ii) $y_o = -1, y_{n+1} = \frac{1}{y_n}$ [1Marks]

iii) $z_o = 2, z_{n+1} = z^2_n - z_n$ [2Marks]

QUESTION FIVE (13 marks)

(a) List the nine (9) steps that one needs to implement in order to import a delimited text file in

excel   [9Marks]

(b) Describe the role of PivotTables and pivot charts in data analysis   [4Marks]

QUESTION SIX (13 marks)

a) Solve the unknown values in the following system of equations by gauss elimination.

[6Marks]

$$x_1 - 2x_2 + 5x_3 = 12$$
$$2x_1 + 4x_2 + 12x_3 = -17$$
$$x_1 - x_2 - x_3 = 22$$

e) Given $u_1 = (12 - y)(4 + y), u_2 = (5 - y)(4 - y), u_3 = (y + 18)(y + 6) \text{ and } u_4 = 94.$

Find the values of y such that 2nd degree difference of u are constant.   [7Marks]

QUESTION SEVEN (13 marks)

a) Given $f(x) = x^2 + x - 8$ and the roots lies in the initial $[1, 2]$.

   i) Find initial approximation to the root using the bisection method.   [3Marks]

   ii) Find the second approximation   [3Marks]

b) Starting with $x_1 = 1$, find two approximation to the root using

   i)   Iteration method   [3Marks]

   ii)   Newton's method   [4Marks]

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