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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 EDUCATION SCIENCE & ARTS

COURSE CODE: STA 100e

COURSE TITLE: PROBABILTY AND STATISTICS I

DATE: 24TH APRIL, 2018 **TIME: 9AM – 12.00 NOON**

INSTRUCTION TO CANDIDATES

- **SEE INSIDE**

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STA 100e: PROBABILTY AND STATISTICS I

STREAM: B.Ed. (Sc/Arts) **DURATION: 3 Hours**

INSTRUCTION TO CANDIDATES

i. *Answer **ALL** questions from **section A** and any **THREE** from **section B***

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

SECTION A [31 Marks] ANSWER ALL QUESTIONS

Question one (15 marks)

a) Define the term statistics? (2mks)

b) Define the following terms as used in statistics

i. Data (1mk)

ii. Population (1mk)

iii. Independent events (1mk)

iv. Continuous variable (1mk)

c) Differentiate between skewness and kurtosis (2mks)

d) Find the geometric and harmonic mean of the following data

Marks	0-10	10-20	20-30	30-40	40-50
No of students	4	8	10	6	7

(4mks)

e) The daily temperature readings (°F) of ski resort on 20days were recorded as follows

Temp (°F)	0-9	10-19	20-29	30-39	40-49
No of days	2	5	8	4	1

Find the temperature range for these days. (3mks)

Question two (16 marks)

a) Discuss briefly the advantages of sampling over census (3mks)

b) Differentiate between the following terminologies

i. Descriptive statistics and Inferential statistics (2mks)

ii. Mutually exclusive events and equally likely events (2mks)

c) The events A and B are such that p(A)= 5/16 , p(B) = ½ and p(A/B)= ¼ Find

i. p (A ∩ B) (3mks)

ii. p (A ∪ B)(3mks)

iii. $p(B'/A)$ (3mks)

SECTION B (39 marks) ANSWER ANY THREE QUESTIONS

Question three (13 marks)

The measurements of fasting serum glucose concentration were made on samples taken from diabetic patients. The results were recorded as follows

Concentration	2.0-2.4	2.5-2.9	3.0-3.4	3.5-3.9	4.0-4.4
Number of patients	9	12	21	7	1

Calculate

i. The mean (3mks)

ii. The mode (3mks)

iii. Mean Absolute Deviation (2mks)

iv. Standard deviation (3mks)

v. Coefficient of skewness and comment (2mks)

Question four (13 marks)

a) City residents were recently surveyed to determine the source of the water they used. Of the 100 who were sampled, 50 used tap water, 60 used borehole water while 20 used both. A resident is selected atrandom, what is the probability that he uses either borehole or tab water. (4mks)

b) The data below the energy consumption at a given temperature

Temp(x)	7	5	69	9	10	15	18	19
Number of particles	2	3	4	7	5	3	1	1

i. Obtain the mean and the standard deviation. (6mks)

ii. What do these values mean? (3mks)

Question five (13marks)

a) State any three ways of classifying data (3mks)

b) The following data relates to the age distribution of students in a biochemistry class 50, 14, 33, 21, 29, 43, 37, 35, 24, 08, 14, 39, 56, 42, 68, 77, 43, 16, 46, 28, 41, 28, 41, 24, 54, 39, 44, 45, 36, 38, 26, 49, 33, 29, 30, 32, 22, 63, 07, 32, 19, 66, 18, 27, 59, 34, 72, 31, 44, 37, 48, 36.

i. Construct a frequency distribution table for the above data (3mks)

ii. Determine the modal and median age (3mks)

iii. Quartile deviation (2mks)

iv. Coefficient of variation (2mks)

Question six (13 marks)

a) Discuss the role of diagrams and graphs in data analysis (3mks)

b) A horticulturalist has obtained the distribution of the heights of 19 trees planted in a grove as shown below.

Height	60-64	65-69	70-74	75-79	80-84
Frequency	2	4	7	4	2

Construct

i. Histogram(3mks)

ii. Frequency polygon (3mks)

iii. Cumulative frequency curve (4mks)

Question seven (13marks)

a) What is conditional probability? (2mks)

b) In a certain laboratory which employs 500 technicians, 2% of all employees have a minor accident in given year. Of these, 30% had safety instructions whereas 80% of all employees had no safety instructions.

Find the probability of an employee being accident-free given that he had:

i. No safety instruction (4mks)

ii. Safety instructions (3mks)

c) Using the data: 12 13 54 56 25, determine the type of kurtosis present (4mks)

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